COMMAND AND GENERAL STAFF SCHOOL

MILITARY REVIEW

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MILITARY REVIEW

QUARTERLY REVIEW OF MILITARY LITERATURE

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January, 1942

Fourth Quarter 1941

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Mission

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a section of "Foreign Military Digests."

A "Library Bulletin" Section lists books, recently accessioned, which are of particular significance.

This *Review* is published as a guide to modern military tendencies and to inspire vigorous thoughts on the subjects treated.

The opinions expressed and conclusions drawn in articles are *solely those of the authors and are in no sense official.*

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Acknowledgement

The editors desire to express their thanks and appreciation to those persons who have valuably assisted in the preparation of material for this issue. The work of contributors has been done in addition to their regular duties and gratuitously on their own time. We are very grateful to the following officers for their generous donations:

BRIGADIER GENERAL HARRY D. CHAMBERLIN: *The Cavalry Replacement Training Center.*

LIEUTENANT COLONEL W. A. COPTHORNE: *Morale.*

LIEUTENANT COLONEL JAMES C. CROCKETT: *3rd Battalion 4th Armored Regiment Forces a Crossing of the Meuse River at Montherme May 13, 1940.*

LIEUTENANT COLONEL C. A. EDSON: *Characteristics and Organization of the Motorized Division.*

BRIGADIER GENERAL H. H. FULLER: *The Development of the Command and General Staff School.*

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COLONEL O. H. SAUNDERS: *Task Forces.*

MAJOR ARTHUR G. TRUDEAU: *River Crossings.*

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The Cover

This is an artist's conception of one of the British tanks, as pictured in *The Illustrated London News*. See article on page 53.

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Command and General Staff School

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Extension Course Section	COLONEL A. J. MCFARLAND, *Infantry*

The Development of the Command and General Staff School, Fort Leavenworth, Kansas

BY

BRIGADIER GENERAL H. H. FULLER, U. S. ARMY,
Commandant

The history of the Command and General Staff School dates from 1881. On May 7th of that year, General William Tecumseh Sherman, commanding the Army of the United States, directed in General Orders No. 42, War Department, that a "School for Application for Cavalry and Infantry" be established at Fort Leavenworth, Kansas.

Following the Civil War the Army had been reduced in size and split into many small units to garrison many small posts. The majority of these were to be found in the West for protection against Indian raiders. Many officers who had held comparatively high rank had been reduced to the grade of lieutenant, with no prospect of early promotion. During and after the Civil War the officers had been secured from every rank of life. Some were well educated, others poorly so. Morale was low and the future looked black.

The Civil War had demonstrated that a thorough military education as well as the quality of personal leadership was necessary for successful leaders. In order to build up morale, increase interest in the military profession and to develop esprit, the army commanders of that period, Generals Grant, Sheridan and Sherman, organized post lyceums. They hoped education would bring about the desired results.

Up to 1881 there had been no school for the combined arms. Since 1824 the Artillery School had been in existence at Fortress Monroe, Virginia. The "School for Instruction of Infantry" at Jefferson Barracks, Missouri, which was organized in 1826, had been abandoned in 1828.

Major General John Pope, who commanded the Department of the Missouri for many years, had long been advocating the abandonment of the small scattered posts throughout his department. He recommended strongly many times that Fort Leavenworth was an ideal post for the concentration of a large body of troops for "military instruction and exercises."

General Orders No. 42, War Department, May 7, 1881, specified that there would be assembled at Fort Leavenworth not less than four companies of infantry, four troops of cavalry, one battery of light artillery, and three field officers of cavalry or infantry. These school troops were used constantly for the practical instruction of the students. The senior field officer was to command the school and the next five seniors were to form the staff. The students detailed for instruction were to be "one lieutenant of each regiment of cavalry and infantry, preferably such as have no families or who have not had previously the benefit of other instruction." "These lieutenants will be attached to the companies composing the school, and will perform all the duties of company officers in addition to those of instruction." General Sherman, in his directives pertaining to the school, emphasized that instruction should be practical. Though there have been many changes in the school since 1881 and school troops are no longer provided, this method is still followed in the "applicatory system" of instruction.

It was directed that: "All officers will purchase their own text books and stationery, but other expenses will be defrayed out of the post fund so far as existing Army Regulations permit, except blackboards, desks, tables, chairs, furniture, etc., which will be supplied by the Quartermaster Department on requisition made by the commanding officer, approved by the department commander."

Colonel Elwell S. Otis, Twentieth Infantry, was assigned to the post and directed to organize the school.

READING, WRITING AND ARITHMETIC

On January 26, 1882, the War Department issued General Orders No. 8 which set up the "program of instruction to govern the school". This order established the school and charged Colonel Otis "with the practical instruction of every soldier and officer of his command in everything which pertains to army organization, tactics, discipline, equipment, drill, care of men, care of horses, public property, accountability, etc., and generally of everything which is provided for in Army Regulations. These must be his first care and the second is 'theoretical instruction' which ought to precede a commission, but is not always the case, viz: reading, writing, grammar, geography, algebra, geometry and trigonometry sufficient for the measurement and delineation of ground, and such history as every young gentleman should be presumed to know; and third, the 'science and practice of war', so far as they can be acquired from books."

The first school was housed in Building 44, which is now occupied by the Army National Bank.

The students, upon reporting, were examined by the staff of the school and divided into two classes. The first class took only higher instruction, the second class the whole course. Subjects for the First Class included:

Mahan's Outposts
Meyer's Signaling
Mahan's (Wheeler's) Field Fortifications
Woolsey's International Law and Laws of War
Ive's Military Law

Operation of War (Hamley)
Lessons of War as taught by the great masters, Colonel France J. Soody
Lectures by professors and essays prepared by students from general reading
Practical instruction in surveying and reconnoitering by itineraries and field notes, as prescribed for the use of the Army.

Subjects for the Second Class included:

Correct reading aloud with care and precision, with proper accent and pauses, to be heard and understood.
Writing—a plain hand, easy to read, designed for the use of the party receiving and not an exhibition of the haste and negligence of the writer, especially the signature.
Grammar (Bingham)
Arithmetic (Hagar)
Geometry (Chausenit)
Trigonometry (Chausenit)
General Sketch of History (Freeman)
History of the United States (Scarly, Goodrich).

The First Class of lieutenants numbered forty-two. The students engaged in drills with the school troops and when the latter were on such duties as to suspend drills, the officers used this time in study and recitation. The commandant reported their work entirely satisfactory. Examinations were given to all students.

During the year 1881 steps were taken to expand the Post library to meet the needs of the students.

Speaking of a few members of the Second Class, the staff in its annual report, rendered October 11, 1882, remarked:

"How far the shortness of the term, the length of lessons, the long cessation of regular habits of study, on the part of some of the officers, may have interfered with and discouraged them, the board cannot, of course, determine, but admit that it is not improbable that either may have some effect upon the application to or proficiency in the studies of the officers detailed for instruction."

"In establishing the school considerable difficulty was experienced in so regulating the duties of the different organizations represented as to avoid conflict of action, and at the same time to have opportunity for necessary recitation and for full performance of other necessary duties devolving upon officers serving at a large garrison post. The bringing together of troops of the three arms, and of classes of officers separately identified with each, in order that all of the latter might be instructed in the various matters pertaining especially to each arm, as well as in those which are common to all, was an untried experiment. The problem of uniting officers having dissimilar duties of equal duration to be executed within the same and also upon different portions of the day, for purposes of instruction, is in itself quite troublesome but especially so at this post, which is in a continued state of unrest, owing chiefly to its locality and the transient character of some part of its garrison. Besides, officers and enlisted men were assembled here from different commands and sections of the country. They came with different and antagonistic opinions regarding military life, duty and discipline, and the attempts which were made to harmonize ideas and action were attended with constant labor. . . . The duties of supervision growing out of a system of instruction, taken in connection with those of post administration, strictly speaking, becoming sufficiently burdensome to require a division of labor among assistants, and it being desired to carry out directions to maintain the unity, or unseparableness, of post and school, Post Orders No. 38, of February 15, last, was issued, which created a school secretary with well defined obligations, and a fixed status of all officers permanent and attached in regard to certain hitherto unproclaimed conditions. The methods adopted have worked smoothly and with satisfaction. The time of the secretary of the school has been fully occupied in his duties and the post adjutant's office has been relieved of a mass of papers and records which are constantly accumulating." This organization is still in effect.

"The proper classification of officers for purposes of instruction is attended with difficulty. Some have been recently appointed from civil life, have liberal educations, but slight knowledge of military affairs; others came from civil life, with moderate educational attainments, of whom a proportion have experienced considerable active service in the field, and others are almost without military experience. Again, another class has passed the course of instruction at the United States Military Academy and some of this class have actively participated with troops in severe campaigns. Both these and a number of appointments from civil life might be denominated practiced soldiers.

"All of these officers must be merged into two divisions. As a consequence, the average ability of the members of the divisions must be estimated, and the lessons given according to the estimate fixed. It follows, therefore, that those individuals who have not enjoyed the advantages of fair preparation before entering school have arduous tasks to perform and cannot grasp or receive the full benefits of the teachings given, while those educationally advanced, either in the practically civil or military branches can quickly comprehend and assimilate the substance of all subjects taught."

The work of the school proved so successful that in the Second Annual Report, rendered October 6, 1883, the Commandant recommended that one-half of the companies of the garrison should be relieved every two years in order to bring other organizations to the post so "that all regiments may have like opportunities to receive whatever benefits the school may confer and that the good effected here may be as widely disseminated throughout the army as possible."

During the second year of the school many of the difficulties encountered in the original organization were eliminated and "drills, recitations, ceremonies and hours for study follow each other in rapid succession throughout the day; and as for practical instruction not considered strictly of a military nature, when the presence of troops is unnecessary, it can, if required to extend over a considerable portion of the day, be deferred to those months of the year when class recitations are suspended."

Students were called upon to perform ordinary post duties, such as members of courts, boards, and records of proceedings and at times they were detailed as instructors.

As happened prior to the recent expansion of the army, during the second year of the school the enlisted strength of the school troops was reduced. The Commandant reported: "It is difficult to obtain desired results from tactical exercises without strong companies. Five or six officers cannot be advantageously employed at an infantry or cavalry drill when but two or three sets of fours participate." Conditions in 1883 were quite like those of the 1930s.

During the third year of the school an appreciable amount of equipment was acquired to fulfill vital needs. "Upwards of $800 have been expended for books, maps and charts, nearly $800 for mathematical instruments, $500 for printing material and instruments and a considerable sum in the purchase of stationery and furniture. The school library, independent of that connected with the post, and which is constantly increasing, contains upward of twelve hundred volumes. Instructors are able to secure the printing of their manuscripts prepared in the performance of their duties, and thus text books on various subjects are being gradually obtained."

Instruction remained experimental "dependent on the capacities and necessities of the students as shown by examination before the school staff."

About this time it appears that the detail of married officers as students was authorized for the Commandant reported a need for sets of quarters for these officers.

In 1883 the Commandant addressed an interesting memorandum to The Adjutant General with reference to the selection of students for the course. He quoted it again in his annual report in 1884. The basic principles hold true at this time: "The course here is not difficult for one who has received a fair English education and who is disposed to make good use of his time, but the school presents no attractions for demoralized and indolent gentlemen. Besides, the time expended upon them is almost thrown away. They will carry very little away with them, and will be very apt, as soon as restraint is removed, to fall into their old habits. Hence as examples for good or as members of the army expected to render valuable service, they will prove failures. Every regiment has energetic, well balanced and conscientious officers, and to such advantages of the school will be very beneficial, and the army will be benefited hereafter by training discipline and habits of industry which they will acquire here. I think that regimental commanders should be charged to exercise care in making selections."

During the next few years the number of students required to take the second class work (reading, writing, history, etc.) was reduced. The examinations given at time of entry showed a much higher degree of knowledge on the part of the students.

In 1885, with a view to suitably recognizing the qualifications of the officers who, by their excellent work, had demonstrated their ability for higher and more important positions, Headquarters of the Army ordered that the General Commanding the Army appoint a board of officers to conduct examinations at the close of each two-year course. The results were to be published in orders.

On June 22, 1886 the name of the school was simplified. It became "The United States Infantry and Cavalry School." Instruction still remained experimental. In order to establish it on a permanent basis, in the annual report of August 29, 1886, the Commandant made specific recommendations as to the selection of students, entrance examinations, organization of the school, the course of study and the grading of students.

The First Definite Program

In 1887 a board of officers was appointed by the War Department to study and prepare such regulations and program. These were published in General Orders No. 17, A.G.O., March 27, 1888. It was prescribed that:

(1) The course of instruction would be for two years, each year being one term.
(2) The students would be placed in one class.
(3) Instructors would grade the students on all recitations and exercises. These grades were to be used in determining the proficiency and standing of the students.
(4) Textbooks were to be used with recitations therefrom, supplemented by lectures and exercises in application as laid down in the program for each course.
(5) Annual examinations were to be held.
(6) The examination was to be given a value of ⅓ of the term's grade. The student would draw a subject, recite thereupon and be further examined by the staff in its discretion. The staff would grade the recitation.

The program of instruction prescribed was as follows:

1. *Department of Military Art:*
   a. Military policy and institutions.
   b. Strategy.
   c. Tactics.
   d. Operation of a mixed character.
   e. Military geography.
   f. Military administration.
   g. Didactic study of campaigns and battles.
2. *Department of Law*
   a. Military law.
   b. Constitutional law.
   c. International law.
3. *Department of Engineering*
   a. Course of topography.
   b. Course of field fortifications.
   c. Course of field engineering.
   d. Course of signaling and telegraphy.
   e. Course of mathematics.
4. *Department of Cavalry*
   a. Cavalry tactics.
   b. Cavalry field service.
   c. Equitation.
   d. Hippology.
5. *Department of Infantry*
   a. Infantry tactics.
   b. Infantry field service.
6. *Department of Artillery*
   a. Ordnance and gunnery, consisting of recitations, lectures, problems and field exercises.
7. *Military Hygiene, Early Aid to Injured*
   a. Military hygiene.
   b. Early aid to injured.

The value of the school was being recognized. In February 1890 the War Department directed that the graduates be given preference in selection of professors of military science and tactics in the colleges. As a reward to those students graduating with the best record, the War Department directed on February 21, 1890 that from each class certain graduates would be designated "Honor graduates" and the notation carried in the Army Register. This practice was discontinued after graduation of the Class of 1927. Also in 1890 the school moved to the building now known as Sherman Hall.

In 1891, orders were issued that officers who held diplomas from the Infantry and Cavalry School were exempt for five years from date of graduation from the examination in professional subjects for promotion.

The year 1892 saw several changes made in the school system. A preliminary voluntary course in mathematics for the new students was provided. Post schools at other posts were organized. This relieved the Infantry and Cavalry School of much basic instruction.

In 1895 troops for use of school instruction became unavailable. Map problems requiring written solutions were substituted for the practical exercises.

A major change was made in the organization of the school in 1897. The Departments of Infantry, Cavalry, Artillery were consolidated with the Department of Military Art. In their places were substituted the Departments of Tactics, Strategy, Engineering, Law and Hygiene. The duties of the post commander had increased tremendously. To assist him the senior officer on duty with the school was designated the "assistant commandant" and charged with devoting his entire time to the supervision of the school.

When war broke out with Spain, the need for trained officers caused the suspension of the school. The majority of officers were sent to join their regiments and only a few left at Fort Leavenworth to maintain the post. The school was closed for four years. The Spanish-American War and the Philippine Insurrection brought many changes to the army. At the close of the period more than one thousand new officers, a third of the entire officer personnel, had been commissioned from the volunteers. They had had little, if any, systematic military education. The fighting had uncovered many new problems for our military forces. Military science had advanced rapidly. The officers who had been to the school had all been lieutenants. Because of their rank they had had little influence in the conduct of the war, although they individually had received much personal benefit.

Reorganization Under Mr. Elihu Root

The Secretary of War of this period, Mr. Elihu Root, was much interested in the entire army school system. He personally studied the situation and supervised the reorganization of the army school system. General Orders No. 155, WD, 1901, provided for the reopening of the college. It stated: "The Infantry and Cavalry School at Fort Leavenworth, Kansas, shall be enlarged and developed into a General Service and Staff College and shall be a school of instruction for all arms of the service, to which shall be sent officers, who have been recommended for proficiency attained in the officers schools conducted in the various posts." This order also provided for the general scheme of military education. The preliminary instruction originally conducted at Fort Leavenworth was to be accomplished in post schools. Those officers showing superior merit were then to be sent to "The General Service and Staff College." Selected officers from this course were then to attend the Army War College, Washington, D.C.

The College reopened September 1, 1902 with a one year course. The next six years saw many important changes in the school. The course was lengthened to two years, with a new class entering each year. Recognizing the value of the instruction being given, the standard of requirements for selection as a student was raised. In order to qualify as a student the officer selected had to be in grade at least a captain with not less than five years service. The name of the college changed several times, becoming in 1907 "The Army School of the Line."

Meanwhile the physical set-up of the school had been enlarged by connecting Sherman Hall to a remodelled Quartermaster Warehouse, designated as Sheridan Hall, through the erection of a central building now known as Grant Hall.

The Vera Cruz Expedition of 1914 and General Pershing's Punitive Expedition into Mexico, found many Fort Leavenworth graduates in responsible positions. When General Pershing departed for France, during the World War, to prepare for the arrival of the American Army, several important members of his staff were Fort Leavenworth graduates. Other graduates were carefully placed and many held key positions of command and on the staff of the First Army.

1920-1940.

In 1920 Congress passed the National Defense Act. This Act provided for the enlarged and progressive system of schools for the military education, both basic and advanced, of the officers commencing with West Point, the ROTC, and Branch and Special Service Schools. For further advanced training for specially selected officers the General Service Schools, consisting of the Army School of the Line and the General Staff College at Fort Leavenworth, and the Army War College at Washington, D.C., were established.

The school at Fort Leavenworth was reorganized and built around the four principal sections of the staff: administration, military intelligence, military operations, and supply. During the period of reorganization, the staff and faculty produced a complete series of military texts, American in character, covering the tactics and technique of the various arms, the principles and decisions involved in handling the division, the corps and the army, and the duties connected with command, staff and supply. Very few changes were made in the curriculum from this time on until recently when, during the present emergency, it became necessary to reorganize the school to give, primarily, maximum staff instruction in minimum time. The year 1923 saw the school name changed again to General Service School and the course reduced to one year. The next major change came in 1928, when the name became "The Command and General Staff School" and the course extended to two years of instruction. Only regular army officers were detailed to this course.

The Special Command and General Staff School Course for Officers of the National Guard and Organized Reserves was established in 1924 and continued yearly until 1940. It was of three months duration, from March to June.

In the early 1920s a branch was added to the school to prepare extension course material for the home study of Reserve officers. This section continues its work today.

As the demand for more graduates increased, the course in 1935 was again cut to one year. The work of the school continued unchanged, stressing command and staff functions, until February 1940 when the class then in attendance was graduated early in order to return the officers to the rapidly expanding Army.

In the fall of 1939 the regular army commenced to expand. Existing organizations were brought up to full strength and new ones were activated. A definite shortage of trained officers for duty with troops existed. Companies, etc., had only a portion of their authorized officers and battalion and higher staff officers were functioning with a minimum of personnel. To alleviate this shortage, all service schools were suspended about February 1940 and students and many instructors were returned to duty with troops.

During the remainder of 1940 the army increased tremendously in size. Early in 1940 Reserve Officers were ordered to extended active duty. In the fall of the same year the National Guard was ordered to a year's active duty. Finally, in September 1940 the Selective Service Act brought in many new men. The National Guard had already been organized into divisions. When the emergency was declared, there were no army or army corps headquarters except on paper. As the army expanded, GHQ, Army and army corps headquarters, air support commands, and new regular army divisions, triangular, motorized, armored and cavalry, were organized. All of these new headquarters and many of the National Guard Divisions required staff officers. The War Department required additional staff officers to handle the rapidly expanding plans. The demand for trained staff officers and, at the same time, trained commanders was tremendous. A staff officer requires special training. He must know the capabilities of not only his own, but of all of the arms and services, understand how they work together and fit into the successful efficient team. He may be a superior company commander but that does not necessarily make him a good staff officer. In other words, he must be able to see "the big picture."

The School Today

To provide trained staff officers, the Command and General Staff School was reopened in December 1940. Under the former curriculum, officers had received instruction in command and staff procedure of the entire staff. The immediate demand for staff officers was such as to make it impracticable to send students to school for a year. Therefore the War Department directed that a series of two-month courses be initiated in December 1940 for training officers for specific staff sections.

The mission assigned the School is to train general staff officers. The course is divided roughly into two parts: the first, a general view of staff procedure and, the second, specialist instruction in the functions and duties of staff officers of the first, second, third and fourth sections. This instruction is intended to fit the student to carry out the duties of a chief of section or assistant thereto.

The special two-months' classes are continuing with normally only a week's break between the graduation of the class and the induction of the next. The size of the classes has been gradually increasing until now it has nearly reached the capacity of the school with its present equipment. Officers of the Regular Army, National Guard and the Organized Reserves all are eligible for selection to the School. Each class has officers from all three groups.

The War Department makes allotment of students for each of the four staff sections to the Field Armies, the Chief of the Armored Force, the Chief of the Army Air Force, the Washington Provisional Brigade, the Corps Areas, the Chiefs of the branches, the War Department and The Adjutant General. Commanders sub-allot quotas to their subordinate units. The directive issued by the War Department prescribes the requirements for selection as students. It states that the officers should not be below the grade of captain, should be serving on the staffs of Armies, army corps, corps areas, divisions, brigades, regiments, battalions, similar units, or be considered suitable material for such assignment or as instructors at service schools, preference being given to officers of less than forty years of age who are graduates of a special service school. The student is assigned for instruction in the staff section recommended by the commander detailing him to the school.

The War Department Field Manuals are used as textbooks. Lessons are assigned daily for home study. The course is built on the doctrines expressed in our official War Department documents. It consists of conferences, exercises, map exercises, map maneuvers and tactical rides. Students are required to submit solutions for certain phases of the map exercises. Certain of these are graded and form a basis for determining the progress and standing of the student. Instructors are permitted to discuss freely current changes or developments. If their ideas differ from those prescribed in official publications, they will state the personal nature of their ideas. The course stresses the importance of speed, coordination, cooperation and teamplay involved in successful operations.

The tactical doctrines of the combined arms are stressed sufficiently to familiarize the students with their general application. The course of instruction is based upon emphasizing the practical solutions to problems confronting division general staff officers during mobilization and operations. It is applicatory in nature.

The mission accomplished by the school prior to 1918, as expressed by General John J. Pershing in his address at the Army War College on September 2, 1924, to wit:—"During the World War the graduates of Leavenworth and the War College held the most responsible positions in our armies, and I should like to make it of record that in my opinion, had it not been for the able and loyal assistance of the officers trained at these schools, the tremendous problems of combat, supply and transportation could not have been solved"—is still the mission of the Command and General Staff School today. It is believed that it is being accomplished today to meet any test of the future.

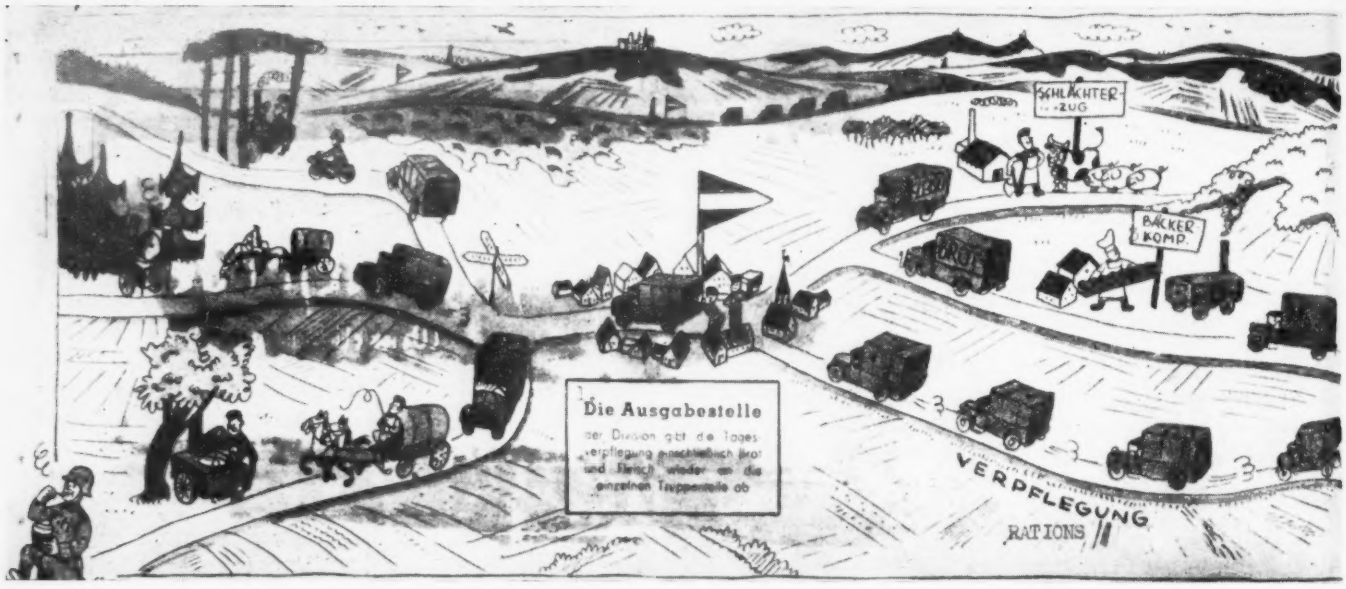

FIGURE 1—THE VARIOUS STEPS IN SUPPLY, AS SHOWN IN BOX

Notes on the Ration Supply of the German Army

BY

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It is interesting to note that the general system of supply in the German Army closely parallels that of the American Army. Figure 1 at the top of the page, which was taken from the German pictorial publication *Die Wehrmacht*, depicts the flow of rations from the home bases in the zone of the interior to the soldier at the front.

As in our army, the system extends from the zone of the interior, through the communications zone with its necessary subdivisions, into the combat zone and on down to the field kitchens. Its operation is carefully planned in much detail permitting it to function so smoothly that commanders are relieved of any anxiety about food not keeping up with the troops, and the soldiers remain ignorant of the vast organization behind them which is responsible for supplying them with their daily needs.

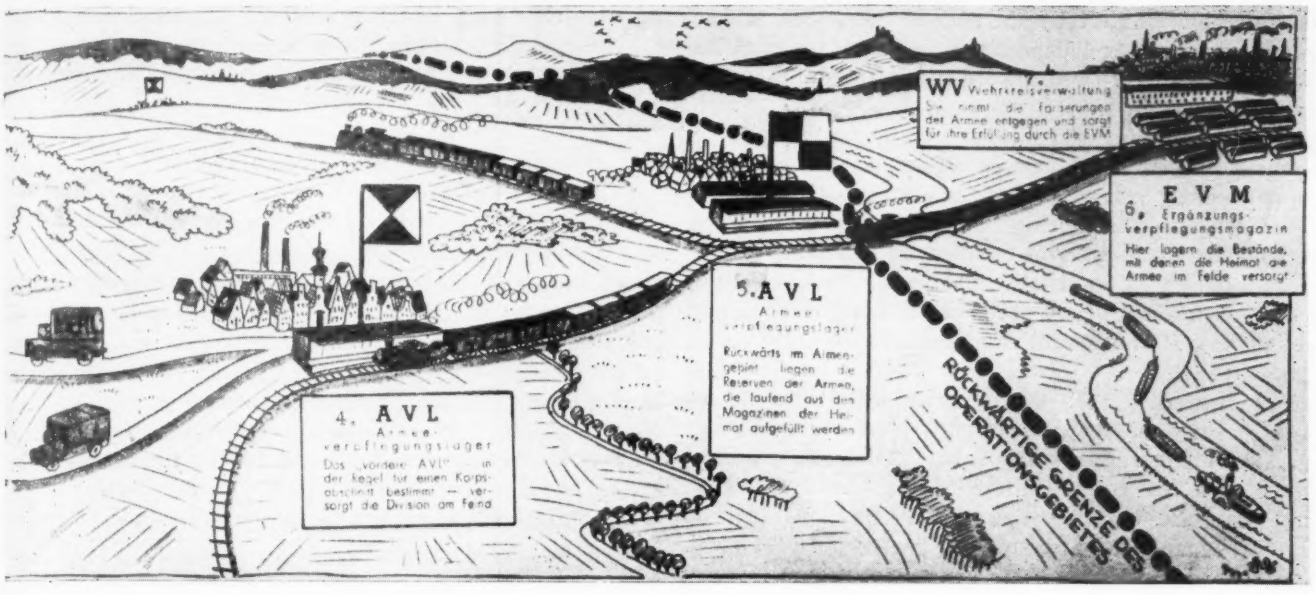
One of the fundamental supply principles embraced by both the American and German armies is that the impetus of supply is from the rear toward the front. Let us then follow Figure 1 from rear toward the front.

WV in box 7 represents the Defense District Administration. It receives the requests of the army, and takes measures for their fulfillment through the reserve supply depots. This district may be compared to our zone of the interior where the reserve and base depots supporting a theater of operations are located.

EVM in box 6 represents a Reserve Supply Depot. These depots contain the supplies with which the home country (or zone of the interior) provides the army in the field. These, as well as various other depots in the zone of the interior, stock large quantities of supplies for troops and animals. Those stocking rations contain non-perishable food, such as canned goods, lentils, rice, flour, dried vegetables, coffee, tea, etc. In close cooperation with the Food Ministry and the Army Administration Office of the Army Supreme Command, the warehouses of these depots are constantly restocked by food industries and farmers' organizations who make deliveries in accordance with the orders they receive.

Coming forward we cross the dotted line which is the "Rear Boundary of the Region of Operations" and corresponds to our theater of operations. In box 5, AVL represents an Army Supply Depot. In the rear of the area occupied by a field army, we find the reserve supplies which are replenished constantly by supplies forwarded from the depots in the home country or zone of the interior. These rear army depots correspond to our base and intermediate depots of the communications zone. The rations' sections of these army supply depots are replenished from ration depots in the zone of the interior by means of railroad supply trains. These trains are special "type" ration trains and the method of loading and their contents are always uniform and exactly prescribed so that they may be requistioned by the use of one code word.

In box 4 we have another AVL; the most advanced field army supply depot, which as a rule, is intended for a sector occupied by an army corps, and takes care of the divisions in contact with the enemy. These are probably similar to our


WV
E V M
6. Ergänzungs-verpflegungsmagazin
Hier lagern die Bestände, mit denen die Heimat die Armee im Felde versorgt
5. A V L
4. A V L
RÜCKWÄRTIGE GRENZE DES OPERATIONSGEBIETES

LEGENDS 1 TO 7, ABOVE, FORM THE BASIS OF THIS ARTICLE.

field army depots, which we currently term army supply points. As in our army the German field army supply service is responsible for the supply of all subordinate units and detachments. It provides for a continuous flow of supplies through its depots and various field army supply installations acting as a middle-man between the rear and the combat units at the front.

The German army ration establishment, located at one of these advanced army supply depots, is the ration base for divisions in the front lines. Apparently, owing to the mobility of the present war, German divisions have no supplies of their own. Each division motor column arrives daily at the AVL (Box 4) where it receives its requirements of non-perishable food and fodder and then returns to its distribution center.

The division distribution installation is explained in box 1 and its purpose is to pass on the daily rations, including bread and meat, to the various troop units. This distributing point may be compared to our railhead, truckhead or division ration dump. When the division is on the march or in a fast moving situation the point of distribution is moved almost daily and the task must be accomplished in a few hours.

The perishables, meat and bread, are obtained from the butchering unit and the bakery company. Box 3 indicates a bakery company. The trucks approaching it from the right contain flour while those departing contain the finished product, bread. Box 2 indicates the butchering unit with livestock approaching it and motor trucks carrying meat departing for the division distributing point. Figure 2 is a sketch of a German mobile bakery at work.

In our army we do not have butchering units. We do have field bakery units but they are not a part of the division, although they may at times be attached to it. In the German army, however, these two units are an organic part of the division and deliver their products by means of their own unit transportation to the division distribution point. (Box 1)

The method of distribution resembles closely that practiced in our army. The rations for the troops are assembled and segregated on the streets of a town, at a country estate, in woods, or in open country and amount to approximately 40 to 60 tons. (The rations in our army approximate 48 tons for the triangular division and 69 tons for a square division.) Precise instructions, such as our distribution time tables in our administrative orders, are issued so that the trains of the units, which are both motor- and animal-drawn, reach the division distributing point over the quickest route at the prescribed time, where they receive their supplies and then deliver them to the field kitchens of their units.

It is evident that the scheme of supply contemplates that rations, as well as other supplies, be brought well forward within reach of the combat divisions. We also know that systematic exploitation of the resources of invaded countries is being resorted to, and no doubt, the butchering or slaughtering units of divisions get much of their raw materials from this source.

Although railroads are used extensively for supply, the German army does not place full dependence on any one means of transportation. In its march through Holland, Belgium and Luxemburg not a single railroad was used to bring up supplies. Two million men were supplied by motor up to the end of the Battle of Dunkerque, that is, from May 10 to June 4, 1940. Again, during the invasion of Poland, because of the impracticability of operation of motor convoys over the muddy roads, a German motorized division was supplied with ammunition, gas, oil, rations and spare parts by plane, and in another instance during the same campaign, where landing facilities were not available, a mechanized unit received its supplies, including gasoline, from the air by parachute.

The use of motors and airplanes for supply purposes is not new to the American Army. Motor supply columns received a thorough workout in the Mexican Expedition in 1916. In April 1938 our Air Corps supplied food and forage

to a platoon of cavalry in Texas which was operating in mountainous terrain. A thousand pounds of supplies, packed in containers, including 490 lbs of hay, 300 lbs of oats, 200 lbs of wood and 160 lbs of rations were successfully parachuted each day for four days.

However, the use of transport planes would seem to require special security measures. Otherwise losses may be costly, as recently brought out by a special news correspondent, who reported that during the time the Germans were using transport planes in large numbers to haul gasoline and oil to planes and tanks at vital front line sectors, the Soviet fliers discovering more than fifty fuel planes parked in an airfield at Orel, 110 miles south of Moscow, blew them up in a surprise raid.

In the interest of economy and standardization, and in order to simplify the problems of packaging and transportation, German scientists have introduced numerous innovations into the ration supply of the German army. Among them are the following: Soybean flour, called "Edelsoja," which added to soups and breads provides proteins, fats and mineral salts without the use of meats, milk and eggs; tomatoes, cheese, jam and applesauce in powdered form; "bratling powder", a substitute for meat, a powdered mixture made from soybeans, grain and milk albumins spiced with herbs; vegetable juices of spinach and cabbage made into dough and served as noodles; dehydrated cabbage, carrots and spinach compressed into brick form; sauerkraut dried and compressed into cubes; meat, cooked, packaged in small paper boxes and gradually frozen which preserves it without refrigeration for about six days. Also, for temporarily isolated units, such as tank, mountain or parachute troops, they have developed a concentrate called "Pemmikan" which contains smoked meat, bacon, soybean flour, dried fruits, whey, tomato pulp, yeast, green pepper, cranberries and lecithen. Another concentrate called "V-drops" containing dextrose, whey, milk, fat and vitamin C, is said to have been used to augment the ration in the Norway campaign.

The need for a special ration for troops temporarily detached has been recognized in our army and after experimentation under Professor Ancel Keys of the University of Minnesota and the Quartermaster Subsistence Research Laboratory, field tests have been made and the following ration evolved:*

Meal 1. Special biscuit—4 oz., veal loaf—3 oz., malted milk tablets—2 oz., soluble coffee—0.2 oz., sugar—0.4 oz.

Meal 2. Special biscuit—4 oz., ham preparation—3 oz., dextrose tablets—1.3 oz., lemon powder—0.2 oz., sugar—0.4 oz.

Meal 3. Special biscuit—4 oz., dry cervelot sausage—4 oz., bouillon paste—0.3 oz., "D" bar—1.6 oz.

The total weight of this ration is 28 oz., and it provides 3,375 calories, 18.2% as protein, 47.0% as fat and 34.8% as carbohydrate.

There can be no question that the Germans have solved the problem of food supply for their armies with characteristic thoroughness. Their extremely long lines of communications from the very beginning had to have their "pipe lines" flowing constantly, because the successes at the front depended on that flow. Superb coordination of the zone of the interior, the communications zone and the combat zone was no idle thought, all three had to function harmoniously. This is reflected in a jingle which is prevalent in the German Army:

"Soldatenblut, Kameradenblut ist nimmer allein.
Immer müssen bei Soldaten Kameraden sein."

which broadly translated means that without teamwork in battle the individual soldier can accomplish nothing, as a member of a team he is everything.

FIGURE 2
GERMAN MOBILE BAKERY

*Rations for Air-Borne and other Mobile Troops, by Ancel Keys. The Quartermaster Review, Sept.—Oct., 1941.

Combat of the Infantry Division Under Conditions of Encirclement

By Brigadier General B. D. Bobrov, *Russian Army*

[Translated from the Russian at the Command and General Staff School from *Voyennaya Mysl*, April, 1940.]

Combat in encirclement is the last means of resistance when all other methods for avoiding this situation have been exhausted. But this does not mean that it is necessary to make an escape from encirclement at any price. Frequently holding on to important places in the enemy's rear can be of much greater importance to the battle and to the operation as a whole, in preference to escape from encirclement, which is connected with heavy losses in personnel and materiel.

An infantry division can find itself encircled as a result of encounter combat, offensive, pursuit or defense. Envelopment cannot be sudden in all instances because reconnaissance, security measures and information from neighboring units afford the opportunity to anticipate enemy intentions.

How does encirclement occur? First of all the enemy envelops one or both flanks, following which the division communications with the rear are broken by enemy tanks, motorized units or aerial landing parties, and in the winter by strong units on skis. After this the enemy forces maneuver into a ring around the encircled force, which is followed by offensive action from one or several directions to cut the encircled force into separate parts, destroying each in turn. The enemy can also simultaneously envelop the flanks and cut off communication with the rear; but even in this case there will always be opportunities for taking measures to liquidate complete encirclement.

In order to combat enemy efforts towards the encirclement of the division it is necessary to create a shock group consisting of tanks, infantry and chemical warfare units, reinforced by engineer agencies and antitank artillery. This group must be used for blows against enemy forces in the process of execution of envelopment. Above all it is necessary to destroy the enemy tank units and aerial landing parties before the enemy infantry will have a chance to come up.

The formation of strong shock groups for action against enemy forces engaged in enveloping the flank, usually must be accomplished at the expense of forces engaged on the front of the division. In this connection the mission of the division may have to undergo changes.

In all types of combat, when the threat of encirclement becomes evident and when it is impossible either to execute the mission or to break contact with the enemy, the division commander will have to assume the defensive. Only under such conditions will it be possible to delegate the necessary forces and means for repelling or destroying enemy forces threatening envelopment. But there can also be a situation in which only the stubborn execution by the division of its fundamental mission will be able to end the threat of encirclement. In all cases the decision of the division commander will be predicated upon the situation not only of the division, but also that of higher unit.

History knows many instances when an erroneous estimate of the situation and unreasonable stubbornness in execution of the old mission when threatened by encirclement would bring about the latter. The most vivid example of this is found in the activities of the German XXV Reserve Corps encircled by the Russians at Lodz in November 1914.

If the threat of encirclement arises during defensive combat, then at the order of the division commander, (1) cut off positions in the direction of the threatened flank are taken up; (2) the division shock group, consisting of the 3d Infantry which had been the division reserve, and tanks are transferred to one of the antitank sectors in order to put an end to the threat of encirclement, by a simultaneous attack jointly with the corps reserve and with the support of all or the greater part of artillery. Artillery, antitank agencies, various infantry units and other units are detached from positions where the enemy offensive is not successful, and from them the division commander creates the reserve (Table 1).

Active operations directed against the enemy flank or rear are the best means for ending the threat of encirclement.

While organizing forces for the liquidation of the breakthrough, the division commander simultaneously prepares the division for combat in encirclement. To this end it is first of all necessary to create a stable battle array, utilizing the antitank sectors. These sectors should: (1) dominate the surrounding terrain in all directions; (2) be located in the probable direction of enemy encircling movement; (3) as far as possible be a connecting link between the basic front and rear defensive zones; (4) protect the division communication with the rear; (5) lend themselves for secret maneuver and active movements of the garrisons in any direction.

In the event of combat in encirclement three or four antitank sectors will enable the divisions to depend on them. The number of antitank sectors and their total area depend on the terrain, but it is desirable that they should secure the division's defensive on a normal front in not less than two directions.

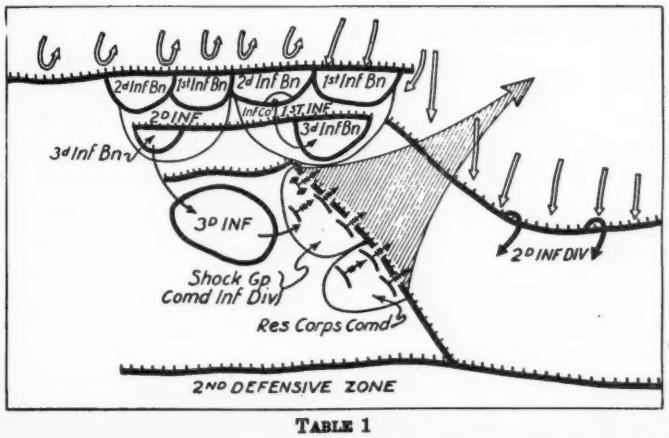


Table 1

Circular antitank and anti-infantry defense is obligatory for every antitank sector; spaces between them are secured by enfilading or oblique fire from the adjacent antitank sectors.

A commandant is designated for the preparation of the antitank sectors for long resistance. At his disposal are placed infantry, antitank and other units from quiet sectors of the front. Within the antitank sectors the commandant distributes stores of supplies of all kinds, auto transport, etc.

Should the actions of the division shock group directed against the threat of encirclement fail to bring the anticipated results and the division commander is ordered to continue combat in encirclement, then the greater part of the artillery, tanks, mobile antitank means, division headquarters, etc., will be immediately transferred into the antitank sectors.

From this moment on the fundamental problem of the division commander is to gain as much time as possible in order to supply the division with everything necessary for combat in encirclement and to fortify its defensive positions. In no case should the enemy be permitted to approach the main defensive sectors without a struggle. All the units of the division should stubbornly defend their positions. It must not be forgotten that the wider is the defensive front in encirclement, the more it draws on enemy strength, which weakens his forces in the direction most important to him. The enemy cannot be equally strong everywhere; there will be sectors on which the enemy will concentrate a decisive superiority of strength for offensive action, but there will also be places where he will be compelled to assume the defensive. Therefore, the division commander must fortify his decision to engage the enemy in encirclement with the following measures:

(a) The entire front of the division is divided into sectors; units and means are designated for each sector and a mission is assigned to it (in command of a sector will be, as a rule, a regimental commander);

(b) From reserves drawn back into the antitank sectors, and from other units sent there anew, a shock group* is formed, to which a mission is assigned, and cooperation with division artillery and tanks is organized;

(c) Inasmuch as with the extension of the front of defense the division will be able to fight on its normal front, the division commander must secure the rigidity of the defense of sectors by means of short forays of tanks in the most important places, supported by as much artillery as possible.

(d) For the eventuality of failure the commanders of sectors are advised as to boundaries and the location of the basic position; the possible retreat will be protected by artillery support and counterattacks by the newly formed shock group;

(e) The division commander gives special attention to the organization of serial and ground reconnaissance.

Passive attitude on the part of one being encircled always spells his doom; action is the sole means for the successful ending of combat. Successes, even the very smallest, but continuous, keep up the morale of troops during combat in encirclement.

*If the shock group, formed during the organization of defense, was not sent into combat for the liquidation of the threat of encirclement, it will be assigned as a sector in the decisive direction of enemy advance.

Supply Problem of the Infantry Division under the Threat of Encirclement

The experiences of recent wars, especially those in Spain and China, show that the modern division, when encircled, can withstand combat for days. For the entire period, during which the division will have to fight in encirclement, it will have to be supplied with the necessary quantity of food, ammunition, motor fuel, as well as medical, sanitary, chemical and engineer equipment.

Time permitting, all the superfluous trains and parts (first of all those for horses) will have to be sent to the rear, and the only auto vehicles left are those required for the divisional supply service during combat, after disengagement from the enemy, and for purposes of maneuver all the sick and wounded should be evacuated without delay.

The length of combat in encirclement depends, above all, on the number of available tanks and antitank units. Only the division which will be able to keep enemy tanks away from its positions will be able to resist in encirclement for a long period. Therefore the immediate reinforcement of the division by additional tank and searchlight units, infantry and antitank guns is necessary, even should this have to be accomplished at the cost of neighboring units. It is absolutely necessary to reinforce the division by additional antiaircraft equipment and by hydro-technical elements of engineer units.

War experiences in Spain and China bespeak the importance of aviation in aiding in the prolongation of resistance of an encircled division. This compels the command to take all measures to assure, that a delegate from aviation be present at headquarters, and that he be furnished with precise instructions, a code, radio station for distant transmittal and reception, as well as specialists for directing the work of equipping landing fields.

Protection of Routes of Retreat

During retreat the principal danger is created by enemy tank units, which, as a rule, will endeavor to intercept the division along the route of retreat. Utilizing their high mobility, the enemy tank and motorized units aided by aviation, will help their ground troops to encircle the division while the latter is in marching order, if they had previously failed to accomplish this in combat.

Therefore, it is equally important for the division to make secure the routes of retreat, as well as to take timely measures for combat in encirclement. For this it is necessary to do the following:

(a) To create in advance antitank sectors at road junctions, crossings, in forest and mountain defiles, etc., which lead towards the route of retreat of the division from the neighboring sector or from the open flank.

(b) At the first threat of encirclement to occupy such antitank positions with antitank artillery and tanks;

(c) To erect obstacles and provide chemical impediments on important sectors, protecting the route of retreat;

(d) To select in advance places along the route of retreat where antitank obstacles are to be erected.

These measures will require heavy expenditure of strength and means. At the same time the division in combat can cope with but one problem, because in preventing the danger of encirclement the division loses the opportunity

for making secure its route of retreat. Therefore, aid from the corps commander will be required.

To avoid encirclement the division is informed as to various places, time when such are to be passed and means for their defense, the directions are given as to liaison and cooperation with neighboring forces. The corps commander takes all precautions in order to prepare for combat all the rear installations and positions. In the event the division is able, due to general retreating to secure its own route of retreat, then, in accordance with the corps commander's plan, such division will be able to extend assistance to the neighboring division, engaged in combat against the threat of encirclement.

Combat in Encirclement

Combat in encirclement is conducted for the purpose of holding a designated space, or in order to prepare the escape from encirclement. When action will be for the purpose of holding an important sector, such action will be of basic nature, while action designed to provide escape from encirclement becomes of auxiliary nature. Of basic nature also will be offensive actions.

In each individual case the combat formation conforms to the particular situation, and to the mission assigned to the division.

The division must assure for itself the freedom of maneuver by retaining sufficient space. Therefore, the defense of the area is arranged on the principle of retaining the possession of the most important points tactically, so that the division commander may have a large portion of his forces in the shock groups of the infantry regiments and of the division. Unoccupied intervals should be protected by obstacles and will be defended by small units. The ability to maneuver for short, decisive blows against the weakest enemy sectors will form the basis for the arrangement of combat order.

By observing these rules the division commander has the opportunity of economically utilizing his personnel and of strengthening his position in depth. This will enable him to concentrate fire in the most important directions and to make secure to execute counterattacks in any direction where enemy groups might be accomplishing a breakthrough.

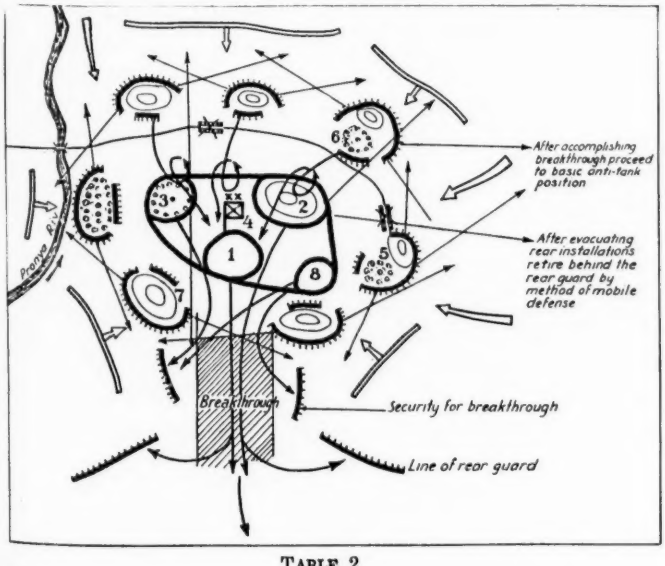

After accomplishing breakthrough proceed to basic anti-tank position
After evacuating rear installations retire behind the rear guard by method of mobile defense
Breakthrough
Security for breakthrough
Line of rear guard
Private Road

TABLE 2

Legend:

1. Division shock group.
2. Shock group of 1st Inf.
3. Shock group of 2d Inf.
4. Division HQ.
5. Shock group of 3rd Inf.
6. 1st Inf. Sector.
7. 2d Inf. Sector.
8. 3rd Inf. Sector.

The entire scheme for the combat formation for battle in encirclement is shown in Table 2.

Respective points of resistance are taken up by forces from company to battalion in strength, depending on the importance of the sector on the line of contact with the enemy. Smaller units are placed between points of resistance and these latter by skillful maneuver must draw the enemy under the fire of the points of resistance. Forces defending the points of resistance must continue fighting even when encircled.

The shock groups of the respective sectors take up the second line of strong points (antitank positions) in the rear. Finally, the division shock group (2-3 battalions) is placed in the principal antitank position (or in several antitank positions).

The actions of the shock group must be exceptionally energetic and sudden. For this reason they should take up well covered and concealed positions, skillfully employed camouflage, and speedily concentrating for the relief of endangered positions. The success of shock groups always depends on the close teamwork with artillery, tanks and other arms.

The division shock group will generally have one mission—to destroy the attacking enemy forces, which will already have been exhausted by combat against the shock group of one of the sectors at the points of resistance of the front line. The attack thus undertaken must be sudden and supported by entire resources of tanks and artillery.

During combat in encirclement the infantry weapons must create insurmountable walls of fire in the shortest possible time and in any direction. This can be accomplished by decentralizing and scattering of weapons, wide development of reserve positions, correct utilization of the terrain, excellent camouflage and skillful maneuvering.

All these measures should deprive the enemy of the ability to conduct fire against observed targets, and will compel him to fire on entire areas, which will produce minimum effect while requiring maximum expenditure of ammunition.

The basic mission of artillery is to repel every enemy attempt to attack the position of the division from any direction. Artillery should be capable of prolonged counterfire with limited means and ammunition, and must be able to mass its fire in any direction. It will be placed in well concealed positions so that concentrated fire in the necessary direction may be conducted by the greater part of the batteries. It should have a large number of reserve positions with circular range and observation. Artillery control is strictly centralized.

In conditions of encirclement the basic mission of tanks is to fight against enemy tanks.

In encirclement tanks will be utilized for counterattacks against those enemy tanks which are effecting a breakthrough, for independent action against enemy infantry, and for joint action with the counterattacking shock group.†

†In defensive action individual tanks may be utilized for firing from stationary position. At a well prepared position such tanks will be transformed into powerful armored gun emplacements.

Tanks will always fire from stationary position before launching a counterattack against enemy tanks. A short, sudden blow is delivered in the closest cooperation with antitank artillery. It is best to attack enemy infantry at 100-150 meters (approximately 100-150 yards) in front of the front line of resistance and under cover of smoke screen.

Chemical elements will be used for covering up the movements of the regimental and division shock groups (smoke screens, blinding chemical agents). When trench mortars are available preparation for counterattack against attacking enemy is generally effected by sudden fire of these weapons.

During combat in encirclement units of the division may be subjected to air attack, and to artillery and trench mortar fire with chemical shells. For defense against contaminating agents individual equipment and individual chemical packets will be used.

The principal undertaking of the divisional commander engaged in organizing for combat in encirclement is reconnaissance by air and ground elements. Under the conditions of combat in encirclement all the activities of all reconnaissance elements are centralized by the division headquarters. This however in no measure relieves commanders of all ranks of the responsibility for the organization of reconnaissance.

Ground combat reconnaissance is conducted ceaselessly and on the whole front. Its purpose is to discover the weakest spots in the enemy position for blows and the breakthrough, to determine the grouping and immediate intentions of the enemy forces, to ascertain at which points the enemy will attempt to break inside the encircled ring, and to capture prisoners.

Air reconnaissance should bring information on the disposition of enemy reserve forces and his supplies, to bare his re-grouping activities and to determine whether reinforcements are being moved up.

The method of action in encirclement depends wholly on the nature of the rapidly changing situation and the entire mission of the division. The division commander must analyze the situation speedily and calmly, make his decision and make precise assignments to lower commanders.

Division headquarters must be at all times informed on the progress of fighting in every part of the front, it must show the maximum flexibility in planning combat, avoiding all unnecessary formalities. Individual assignments must be made through personal contacts with those concerned. The chief of staff of the division also has the duty of coordinating the frequently widely scattered activities of smaller units.

The division headquarters must establish a wide net of command and observation posts. Under conditions when enemy action requires everywhere the constant shifting by the commander and his headquarters from one sector to another, the direction of combat must be exceptionally mobile.

The placing of responsibility for the several sectors of the front on the division staff commanders is obligatory. It is they who will first report to the division commander on the situation in their respective sector, and they will also be the first to execute his instructions.

Liaison under conditions of encirclement becomes especially important. The highly liquid and complicated nature of action will not always afford uninterrupted liaison by all available elements. It is particularly difficult to maintain uninterrupted wire communication. Such liaison elements as tanks, semi-armored light vehicles, runners, mounted messengers, dogs, pigeons, etc., must be widely employed.

Escape From Encirclement

The breakthrough from encirclement is made only when required by the general situation, or at the order of higher headquarters. During the escape from encirclement combat will be simultaneously of offensive and defensive nature.

The opening act of the breakthrough will be reconnaissance engagements intended to feel out the weakest spots in the ring of encirclement. Thereafter the breakthrough itself will take place in the form of an accelerated attack.

Almost simultaneously defensive action to protect the breakthrough will take place. Rigid, stubborn defense of the "gates" formed will continue until the escape of all of the trapped units of the division is effected. Thereafter rigid defense is gradually transformed into mobile form, and obstacles are widely employed.

Before the start of battle for escape from encirclement of the division commander and his staff organize reconnaissance and work out a plan of escape.

Reconnaissance must be circular and extremely active and is effected by ground and air elements. Reconnaissance agencies must act: at night—by raiding parties, in daytime—through reconnaissance of the enemy front line of resistance.

The command of reconnaissance units must always be concentrated at the division headquarters. It is particularly important to organize speedy collection and evaluation of information produced by reconnaisance, needed by the division commander for reaching a decision for the breakthrough.

Regardless of the conditions under which the escape from encirclement will take place, it should always be systematic. Therefore it is always necessary to have a simple plan whose main purpose is to coordinate as to time and space the activities of the units making the breakthrough, with other arms and with security elements.

The infantry division can escape from encirclement by employing one of two methods: by delivering a crushing blow with concentrated forces in one definite direction, or by escaping in two or more places. Each of these methods will depend on the situation. Night is the best time for escape from encirclement. However this operation is also possible in daytime. When selecting the place for the breakthrough the division commander should take into consideration that regardless of enemy strength his forces cannot be distributed in equal strength around the entire ring of encirclement.

In this case, by employing every reconnaissance agency, one must be able to determine which is the weakest spot in the ring of encirclement, and by striking at this spot with lightning speed direct all energy towards escape from encirclement. It is not at all obligatory to escape from encirclement over the shortest route.

In order to determine the place at which escape from encirclement is to be attempted the division commander must have full information on the following:

(1) The enemy—numerical strength, readiness for combat, kinds of arms.

(2) Terrain—extent of enemy fortifications, cover (natural and artificial), obstacles.

(3) Distance of own forces from the place at which breakthrough is to be accomplished.

(4) Air force cooperation—will it be available, to what extent, when and where.

(5) Is it convenient to regroup for the breakthrough in the selected direction.

(6) Measures assuring the egress from encirclement of troops, materiel, wounded, trains, etc.

For the breakthrough and the subsequent escape from encirclement the division should be divided into the following groups:

(1) Units effecting the breakthrough;
(2) Units protecting the escape from encirclement;
(3) Units being led out of the encirclement;
(4) Reserve.

The breakthrough group is formed out of the shock group, part of forces from secondary sectors and the main part of materiel (tanks and artillery), totalling about one-half of the total strength.

The protecting group consists of strong screening units which, after the passage of the first infantry echelon strive to widen the "gates" thus formed. After the exit of all the units from encirclement, the screening forces speedily retire behind the rear guard joining the main forces of the division.

Artillery materiel which has been protecting the breakthrough is the first to be led out of encirclement; it is taken out of encirclement in accordance with a special plan. It is followed by transports of wounded, trains and units which are holding the enemy in antitank zones.

The breakthrough is preceded by a short artillery preparation and a diverting action at a distance from the zone of the breakthrough. Diverting actions should be executed energetically and decisively, so as to divert not only the attention, but also the enemy forces from the selected spot of the breakthrough. The breakthrough is accomplished by tanks. Behind the tanks infantry charges with all vigor, without regard for losses.

Artillery will be employed in a concentrated manner. Its missions are to protect the advance of infantry and tanks by a mobile curtain fire, gradually suppressing enemy flanking fire. The greater part of artillery must be moved into the breakthrough directly behind the first infantry echelon.

The retirement of units occupying the defensive sectors is effected in accordance with a special plan. The exit from encirclement is accomplished in two jumps: the first jump is into the antitank zones abandoned by the breakthrough echelon; After the exit from encirclement of transports of wounded, trains and rear installations, the second jump is made by the units by retiring behind the line of the rear guard.

The rear guard is detailed from the units comprising the breakthrough echelon. Having taken up a defensive line 3-4 kilometers (approximately 2-2½ miles) from the vicinity of the breakthrough the rear guard lets pass through its position all the units, and must not begin to retire until receipt of special order from the division commander. The exit from encirclement is executed at an intense and speedy rate, preserving the strictest discipline and exemplary order.

Whenever even the slightest opportunity presents itself combat aviation must be brought into action for the protection of the breakthrough. The role and importance of aviation are tremendous; it can clear the path for the first breakthrough echelon, preventing the enemy from bringing up his reserves and finally, aid the division which has emerged from encirclement in the task of joining friendly forces.

During the escape from encirclement the engineer and chemical units should increase the rates of such escape by the following methods:

(a) Employing a smoke screen to protect the grouping for combat deployment;

(b) By putting up barbed wire barriers on the covering flanks to prevent enemy attacks during the emergence from encirclement;

(c) By building of column routes, clearing the terrain of obstacles and by containing action;

(d) Increasing the time for rear guard defensive action by erection of obstacles.

Before accomplishing the breakthrough the division commander and his staff remain at the CP, near the antitank zones. As soon as the breakthrough is made, the division commander and the chief of staff, together with staff officers designated in advance, proceed without delay to the zone of breakthrough where they take charge of the action of covering forces, form the rear guard on the first line of resistance, and let pass units emerging through the "gates" of the breakthrough. There should be assured unfailing liaison with staff officers remaining in the antitank zones for the purpose of directing the retreat of units from the defensive positions, and for the formation of columns consisting of vehicles carrying the wounded, trains and rear installations.

After all the elements of the division pass through the "gates" of the breakthrough, the division commander and his staff, having given dispositions for the retirement of the covering forces, proceed to the rear guard, with which they remain until the covering forces retire behind the rear guard.

When the division emerges from encirclement the place of the division commander and his staff should be in front of the division column or with the rear guard, depending on whether an engagement with the enemy attempting to bar the route for the division is again expected, or whether the main danger is from enemy forces pursuing the division.

Task Forces

By

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Military journals and magazines and even the daily papers often mention the use of "task forces" by one nation or another. What is a "task force"? It is a combination of military units to do a specific job. If the job is mainly one for ground forces, then those forces predominate; if for air power, then those forces are the main strength; and similarly for the Navy.

The Germans have been highly successful under widely differing circumstances in employing task forces. The size and composition of such a unit in their armed forces is not fixed by any table of organization. It appears that their table of organization is no more than a mere temporary memorandum, good for the time and force for which issued. With them, the factors entering at any time into the determination of size and composition of a force are: the mission, the commander, and the method for executing the plan. Probably never have two of their separate task forces been the same in size or composition. If such has happened, it has, most probably, been a matter of pure coincidence.

Dependent upon the factors just mentioned, namely: the mission, the commander, and the method for executing the plan, a task force of the German Army may be a reinforced squad or may even be as much as a group of armies. Thus a small, highly trained, specially armed and carefully equipped unit of pioneers and other troops made the world-famed capture of Fort Eben Emael on May 10 and 11, 1940, and thus aided in turning the Maginot Line. This was a task force.

The overthrow of Poland in September 1939 and the downfall of France in June 1940 were each accomplished by forces differing materially from one another as to mission, method, and size, but each under the same commander, von Brauchitsch. Each was a task force.

The conquest of Scandinavia was accomplished by a force under von Falkenhorst made up of naval, air, and ground units, with armored elements in the latter. This was a task force.

The Iron Gate of the Danube was captured in the Balkan campaign by a small force made up after a careful study of the problem and its special needs in the way of personnel and materiel. This was a task force.

The Balkan campaign was carried out under List with air, armored, motorized, and foot units all welded together as one unit. This was a task force.

Rommel's command now fighting in North Africa differs markedly in organization and other essentials from other German units operating elsewhere. His is a task force.

Other nations have not been slow to designate units as task forces.

The Japanese troops at Saigon and Phnom Phen in Indo-China constitute task forces.

The American units now in Iceland constitute a task force.

Is this term "task force" a Nazi invention of the present war? Have the Nazis originated something new in military planning just as some people may believe that the pincer form of movement is some new invention of German origin in the field of military tactics? As to this tactical concept of a pincer movement, we know that it was used in its modern form in World War I and there are historical precedents going back as far as military history goes. So too as to the use of task forces in military planning and execution. From time immemorial successful military commanders are reported to have planned their means with the mission and the contemplated method of execution always in mind. The term has long been in use in our Navy. To say that the term and the idea it expresses are new would not be accurate. To say that the use of the term has become much more general and that the task force has been used to a greater extent in this World War II would certainly be true. Furthermore, it is true that the Germans have modernized the idea so completely as to cause it to amount almost to a new technique.

The comparison of a football game and a battle has been used many times. Perhaps as to task forces it may not be amiss to employ it again. The athletic director of a large university would not think of employing only one team such as the football team to participate in all sports—baseball, tennis, track and others. Every athletic director assembles an appropriate team or task force as the proper team or force to solve the difficulties of each situation. Thus he assembles a baseball team for baseball; a track team for track events; a tennis team for tennis contests; a boxing squad for boxing, and so on for each sport.

It is this well founded idea that has been followed by the Germans. The results have been flexible units fitted to the job confronting them.

Perhaps not a little of the credit for Nazi successes may be due to constant adherence to the idea of using task forces on all occasions, and hence not being encumbered by any superfluous parts of a normal or set organization. It appears that this is nothing more than common sense. It is planning and execution carried to the point of assuring a proper force to solve the difficulties of a given situation. A situation is found to exist in war or is conceived for training purposes. It is analyzed to its smallest details, a mission and plan of execution determined, and then forces assigned to a selected commander. This becomes a task force.

The secret of success in the German application of the idea of task forces appears to lie in unity of command. This unity of command has extended to include air, naval, and land forces as in the case of the conquest of Scandinavia. So far the Germans have had the right man always in the right place exercising this unity of command.

With them there appears to be, thru all echelons, this absolute unity of command. This is fundamental in the Führer idea or principle.

The fact that not often has the same leader been in command in two operations would tend to confirm the viewpoint that the Germans consider much of the secret of successful

leadership to lie in the selection of that leader who is best qualified for any particular task, and is most likely to carry the assignment thru to a successful conclusion.

By what has been said herein it is not intended that the impression be conveyed that the German Army differs from all others and is superior to all others. It has attained marked successes. These military successes are the result of much hard thinking and planning and even more hard and relentless driving in line with apparently sound ideas and principles. This effort is apparently backed by a willing and disciplined people. It is undoubtedly true that the Germans have made war a business. Because of that the Germans have much worthwhile military knowledge. Much concerning military operations may be learned from them.

As indicated above, the German organization is quite flexible. Adherence to a rigid table of organization has not been found necessary nor desirable. This flexibility aids materially in the formation of task forces. This flexibility is attained by organizing basic small units in all subdivisions of the Army according to what is known as the *Einheit* principle. This calls for the basic small unit of each arm or service to be organized, trained, and equipped as a standard unit interchangeable with similar units of other arms or services. This does not mean that each squad or small group of infantry, cavalry or field artillery, is identical as to arms and paraphernalia. Such units will vary in size and in armament, but the idea of interchangeability is behind each. There is a fixed and definite relation between the unit (Einheit) of the various arms and the supply and ammunition requirements of those arms. This reduces many of the problems of supply to convenient, easily applied formulas. The value of this is evident, especially in battles and engagements conducted with hair-trigger speed.

Let us assume that a task force commander, such as a Lieutenant Colonel to reduce Eben Emael or such as General Rommel to operate in North Africa, has been chosen. How then do the Germans work? The selected task force commander becomes directly responsible to the Chief of Staff of the German Armed Forces. Having reported to the Chief of Staff and having been informed of the mission and having been given a previously prepared directive, which has the approval of the Führer, the task force commander selects his personal staff. To insure secrecy, which is often a primary consideration, this staff may be completely isolated for several weeks so that no slips may be made as to contemplated action.

This staff studies the problem from all angles and works out a general plan to include lists of the means and units required. These units, when provided, constitute the task force, the composition of which will depend upon the mission and the method planned for its accomplishment. The equipment and supplies for a task force are determined only after a close study of the situation and the mission.

The force is trained under a special directive prepared by the task force staff. Generally units are kept in the dark as to what they are to do in the forthcoming operations. Thus the pioneers, flame throwers, and other troops assigned to the task force preparing for the capture of Eben Emael first put in long, hard hours in training against a reproduction of that fort. We may imagine that in the absence of any inkling of the actual fort they were to assault, the troops may have been skeptical of the necessity for all of the continuous effort, altho, in general, the willingness of the young German soldier sustains him thru all difficulties and hardships. As another example the Nazi soldiers sent to Libya to fight under Rommel were first given intensive training under the hot summer sun on the sandy stretches of East Prussia. This was training to fit them for the job in a particular terrain and climate.

With training progressing in accordance with a training directive, the staff works out all details of the plans for the operations. This is the most laborious task and the most detailed. The Germans are thorough. Little or nothing is left to chance. All foreseeable difficulties are investigated and plans made to eliminate delays. By eliminating delays, more speed may be obtained and this makes for surprise, which is one of the most important principles of war for the Germans.

No one of the elements entering into surprise, namely: secrecy, speed, daring, or deception is overlooked by the Germans in planning for the operations by a task force.

With the plan for execution completed, the time to begin operations must be decided. In the German Army this decision apparently is made for large task forces by the Führer himself. Once set, this date becomes the basis for a series of conferences between the task force commander and the commanders and staffs of the units comprising the task force. In these conferences every effort is made to weld the team together.

Every weapon is used in any way that can best help to do the job confronting the task force. Thus antitank weapons are used against land fortifications; antiaircraft against tanks; engineers or pioneers as assault troops; aviation as artillery and even naval weapons to support units of troops on land.

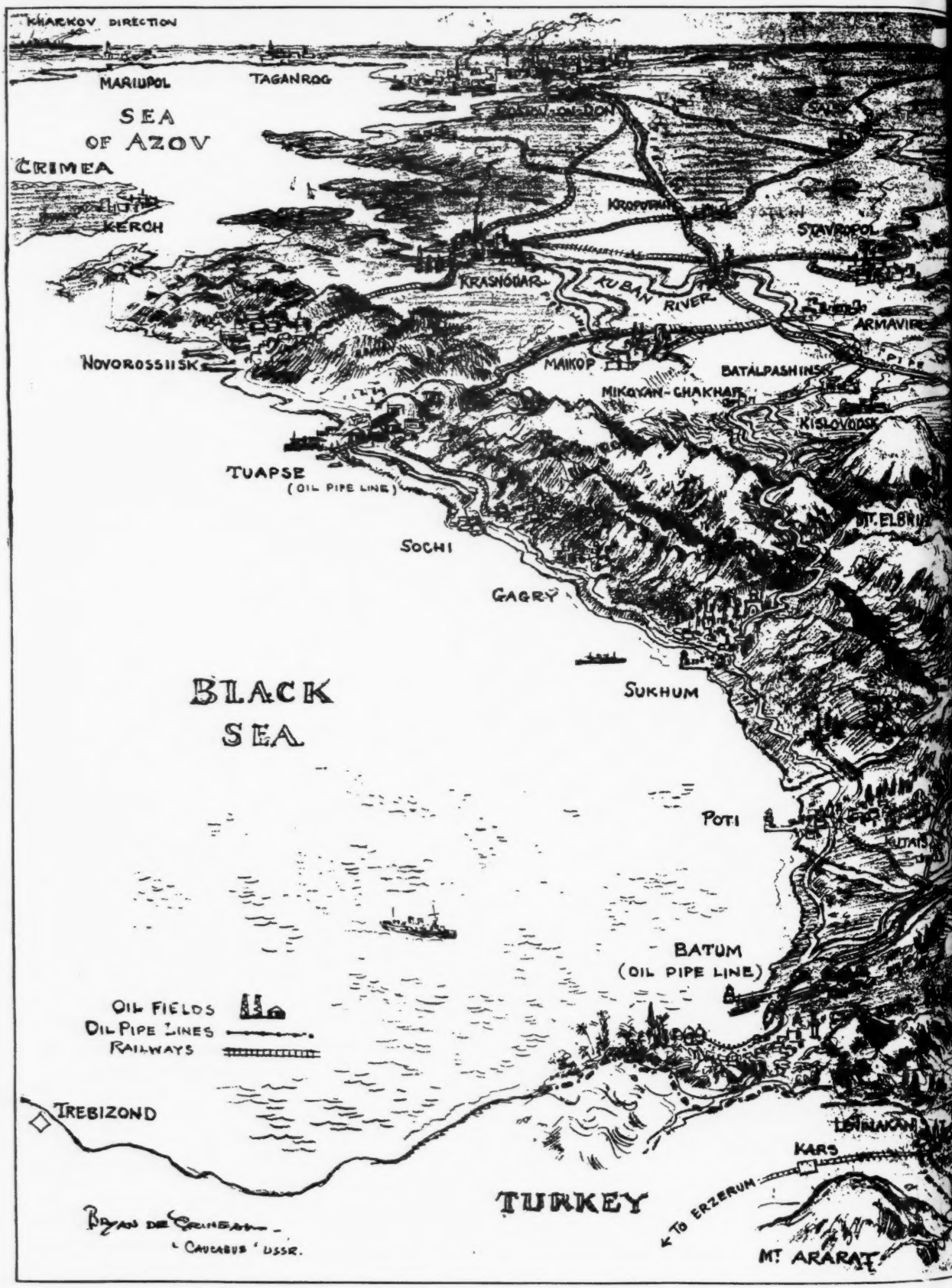
An example of the flexibility of the German organization and of the addition of a number of units to a relatively small force for use in the accomplishment of a particular task is shown in the following order:

"At 3:00 PM (on a certain date), the 1st Company (of the 12th Armored Infantry) will: '. . . . establish a strong support point on the heights about 1,700 yards east of Ablainville. . . . attached to the 1st Company are the following: 2 infantry guns (75-mm self-propelled); 4 heavy machine guns; 1 radio team; 3 antitank guns (37-mm); 2 mortars (81-mm).'" This was a small task force.

Reports from Germany are replete with examples of task forces of all sizes, each organized for the desired end.

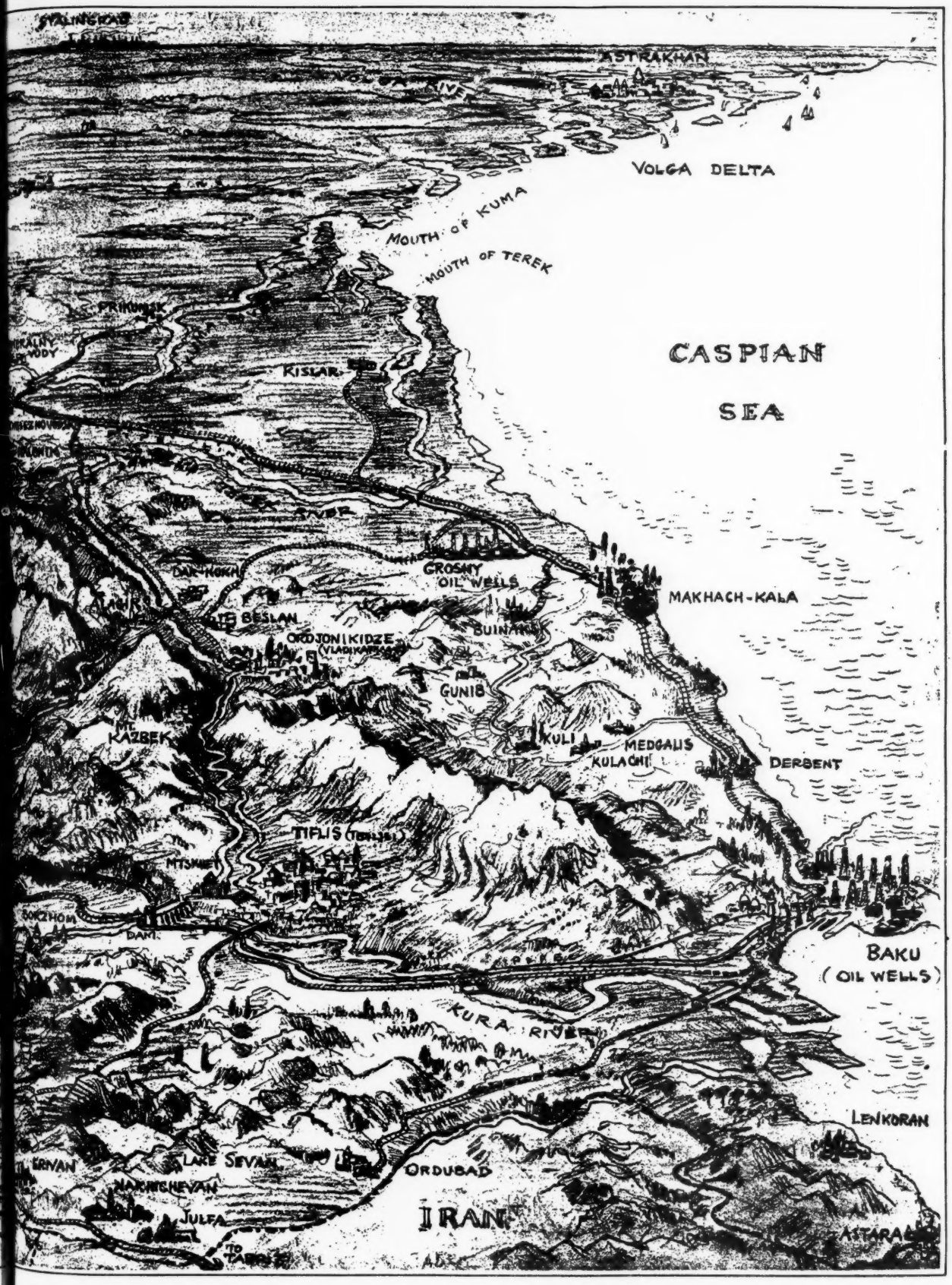
The new German system is neither stereotyped nor rigid. To date it has never been alike in any two operations. This fact makes it quite difficult for an opponent to estimate with a reasonable degree of satisfaction what the Germans may do. Perhaps an aid to deducing capabilities of a German task force will be the study of the specialties of its commander, since the commander is the keystone of the arch of a German task force.

With the Germans, their forces are a pool of men and machines from which to draw appropriate means whereby a job may be accomplished. All of these means are under the tight control of one commander. This same principle is applicable to the training and use of American troops. It behooves everyone in the American Army to be familiar with the ideas fundamental to the organization and use of task forces.



PICTORIAL MAP OF THE SOVIET CAUCASIAN OILFIELDS, THE STRATEGIC AIM OF GERMAN ARMIES APPROACHING ROSTOV

The great oilfields of the Caucasus, with Baku, on the Caspian, the main source of production, and Batum, the Black Sea port, have been described by German strategists as the Achilles' heel of Russia. Hitler's urgent need of oil, after the tremendous drain on his reserves caused by the magnificent defence of the Soviet armies, is compelling Marshal von Runstedt, with his southern armies, to attempt to force his way to Rostov-on-the-Don, at the head of the Sea of Azov, while Marshall von Reichenau, on September 29, began his thrust against the great industrial city of Kharkov (indicated in our pictorial relief map in the top-left corner).



FROM KHARKOV AND THE CRIMEA: SHOWING THE PIPE-LINES FROM BAKU TO ROSTOV, TUAPSE, AND BATUM.

The enemy's advance, even if he holds the Donetz Basin, will find big rivers and the rugged Caucasus mountains providing tremendous barriers, while the Russians are reported to hold large forces in reserve. Baku lies 650 miles and Batum 600 miles from Rostov, Batum being only ten miles from the Turkish frontier. Our map particularly stresses the pipe-lines from Baku to Batum, via Tiflis, and to Tuapse, the important naval port guarding the coast road to Batum, and another arm of the double pipe-line reaches Rostov and Trudovaya.—*The Illustrated London News*, 4 October 1941.

3d Battalion 4th Armored Regiment Forces a Crossing of the Meuse River at Montherme May 13, 1940

BY

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A battle study of a small unit (Bn) of armored infantry published in a recent issue of the *Militärwissenschaftliche Rundschau*, published by the German General Staff, gives an excellent insight into the methods used by a German armored division in the capture of a bridgehead.

In order to give emphasis to the methods used by the Germans, I have separated the situation as presented in the German study from the solution as described in that study. The situation and requirements together with a small map is presented in this article so that the reader may make his own decisions as to a solution.

The solution as made by the German commander immediately follows the Requirements.

SITUATION

Montherme, shown on the accompanying map, is a small French village located on the Meuse River between Namur and Sedan. In the vicinity of Montherme, the mountains force the Meuse into a narrow, gorge-like valley which makes a sweeping curve in the form of a peninsula. The town is small, remote and quiet, in surroundings of scenic beauty, but it is of great strategic importance.

At the base of a steep descent from the hills to the river, a bridge crosses the Meuse into Montherme. This bridge was partially destroyed by the retreating French forces. Along the river's edge on the Montherme side were extensive barb-wire entanglements. Many of the houses in the village were converted into miniature forts. South of Montherme was a large wooded area.

At 3:00 PM on May 13, 1940, a thin haze enveloped the lowlands of the Meuse River. German troops of the 3d Battalion 4th Armored Regiment had reached the heights overlooking Montherme. At that time, desultory French artillery fire was falling in the area occupied by the German battalion. Concentrations by division (German) artillery will be fired on Montherme (village) until 4:00 PM.

The situation at 3:00 PM, as known to the German battalion commander, is shown on the accompanying map. (The outline symbols represent known concrete MG bunkers. The location of the German armored infantry battalion is shown by solid symbol.) *The mission of the battalion at 4:00 PM is to seize the crossing at Montherme and establish a bridgehead covering the construction of a division bridge.* The organization of the troops, the equipment, and the weapons available to the Commanding Officer, 3d Battalion are listed below:

Battalion (consisting of 9th, 10th, 11th and 12th Companies)
Headquarters Company
Signal Platoon
3 Rifle Companies
(9th, 10th and 11th Companies each 145 Rifles, 12 L. MGs and 12 Sub-MGs, 3 mortars, 50-mm, 3 AT Guns).
Machine gun Company
(12th Company 12 MGs, 6 mortars, 81-mm).

Attached to Battalion

2 Inf. Howitzers (75-mm)
1 Company of Tanks (13 Tanks, armed with 75-mm Guns)
2 Guns 105-mm Self-propelled
12 Rubber boats (each 12 men capacity)
1 Platoon of Engineers
250 ft. Foot Bridge

REQUIREMENT

Orders of Battalion Commander (based on his detailed plan for crossing and seizure of bridgehead).

Solution to 3d Battalion 4th Armored Regiment Forces a Crossing of the Meuse River at Montherme

Following is a translation of the German document describing the action of the 3d Battalion 4th Armored Regiment in crossing of the Meuse River at Montherme May 13, 1940. This description is the German solution to the problem presented in the situation as outlined in the above article:

"Over the Meuse . . . " People other than the actual witnesses have not the slightest conception of the intense feeling and nerve-wrecking excitement prevalent among the men while anticipating a major engagement with the enemy.

The entire event was represented in the one word "Montherme," which is the name of a small French town somewhat dormant, remote and desolate. It is strategically located on the bank of the Meuse River and surrounded by the scenic beauty which is created by the winding course of the stream effected by mountains forcing the stream to take a long sweeping curve practically circling the town and creating an inland isthmus.

The Commanding Officer and his staff viewed the isthmus as well as this town from the heights north of the river, observing the ruined bridge at the base of the steep descent and recognizing the extensive preparations of

les Voie
Bac
Bac
de
3
4
la Rova
Montherme
la Longue Haie
La
Navelle
Station
la Val-Dieu
Bois
Roma
LA Meuse
Station
Levrezy
Meuse
Chau Regnault
Bois
Hutin
343
1000
0
1000
2000
METERS
Braux

barbed wire defenses erected by the enemy, the numerous peasant houses each of which may be a miniature fort, and the wooded areas south of Montherme which possibly contain unlimited hostile forces.

Time slowly drifted into evening, punctuated at 15 minutes' intervals of French artillery firing while the lowlands became swathed in a fog of hazy surroundings.

Soon the monotonous routine will be broken by the striking of the clock at which time waves of Stukas will appear from the north while the roaring artillery provides a well-aimed protective barrage in support of the riflemen who will cross the river in rubber boats and open the way by use of hand grenades and hand-to-hand combat if necessary.

" . . . animated by the sole thought to force the crossing of the Meuse River at Montherme!" The determination and feelings of the German forces on May 13 are characterized in this one quotation from the commander's remarks. The moving of the time indicator up to the hour set for the attack is hardly noticeable. If it were only 4:00 PM! Yet Stukas and air bombs stay away. The roaring of aircraft motors may be heard elsewhere, the signal of attack . . . perhaps up-stream near Sedan. But not at Montherme.

Well, we can do without them.

Our units are already placed in the steep rocks over Montherme. It is indeed a difficult job for them carrying machine guns, mortars and ammunition to make the difficult descent in the absence of trails.

The enemy must have noticed us. Yet, is his counter-battery fire placed on our rear all that he has to offer in reply to our preparatory artillery barrage? The entire area of the isthmus with its numerous hills is covered by an increasingly dense fog. Below in the river valley and the town itself, there continues a mysterious calm and peace. However, our rubber boats dragged by vehicles are in readines at a distance of only 50 yards from the residences of Montherme.

"March!"

The trailless descent appeared to be too long. Suddenly the sound of bullets could be heard between the walls of the valley. The men carrying the boats dropped to the ground in the middle of their run. The casualties were dragged into cover by the more fortunate. Piercing eyes searched the other side of the river for hostile machine-gun positions. "The bunker—in the house beside the bridge—!" "The Panzers (tanks) this way!"

The tanks with their guns slowly moved toward the river bank. Their shells caused walls to turn into debris, and flames of fire to set buildings ablaze. . . .

The situation was becoming more serious as our 11th Company met with stiff resistance from the enemy. Parts of the 9th Company had successfully advanced past the perilous bridgehead only to seek cover near the river bank behind a concrete building which housed the village transformer. The rest of their company was driven back by intense cross-fire from concealed positions, in particular bunkers erected inside of private buildings. Neither our artillery batteries, infantry guns nor even the constant machine-gun hammering of our "heavy" company seemed able to wipe out these bunkers.

The commander of the 11th Company, all of a sudden erect in the center of the company, calmly said, "What is the matter anyhow? Nobody is shooting here. Now let's get across!" The men once more jumped up and now brought the boats into the turbulent stream. All danger was forgotten in the midst of the excitement. The other shore was their first objective regardless of the fact that their commander was seriously wounded in the upper leg. Inspired by the critical moment, they gained strength and daring courage. The other bank, fortified with barbed wire defenses which were quickly eliminated, was soon taken. The boats returned to ferry more men, and before long a simple footbridge was completed. From then on the 9th and 10th Companies hurriedly entered the town which was by now one mass of ruins, flames and smoke. The heavy weapons and the rest of the battalion followed without great difficulty. Hand grenades, automatic pistols and wire cutters were used in getting close to the death-spitting bunker. A courageous soldier climbing the top of the bunker demanded with a yelling voice the surrender of the bunker crew of colonial troops. Terribly frightened their dark faces turned ashen-gray, which made them look more animal-like than ever.

The rest of the bunkers and other defense positions, rock pits and improvised fortifications were smoked out. At length the road leading to the hill top was sufficiently cleared and the battalion attained the heights of the isthmus as their second objective at 7:00 PM after three hours of bitter fighting. As they found themselves face to face with a second system of enemy defenses they dug in. Throughout this night French gun fire was directed at the river crossing, rounds of machine gun fire were exchanged and guerrilla warfare continued behind the new lines. The following day saw the Frenchmen very active, covering our new positions with seemingly endless shell and machine-gun fire, and attempting in vain to break through them. In spite of their desperate efforts for many hours, units of our batteries advanced through the forest defense positions of Bois de Roma to the pill-boxes on the cliffs of Hill 398. Another counter-attack intended to throw us back as far as the Meuse River was repulsed, however, not until after many hours of intense combat. The second night resounded with a mighty, ever increasing artillery barrage on both sides.

The difficult crossing of the Meuse had been accomplished and a bridgehead was formed. During the night a bridge was constructed by our pioneers under heart-breaking and hazardous conditions. On the morning of May 15 the attacking tanks passed through our position. The powerful enemy defenses had been eliminated and the hostile forces routed. Our breakthrough had been achieved.

EDITORIAL NOTE: The following solution is not a part of Colonel Crockett's article and was not written by him. It is added by the editor to show that the German solution indicated in the above description might be translated into the form of an order, as we might give it, as follows (some details are assumed or deduced):

The Commanding Officer, his staff and separate organization commanders were assembled on the heights North of the river on May 13, 1940, observing the action. At about 3:30 PM the commander issued the following oral order:

Gentlemen, you know as much of the enemy situation as we have been able to determine. We will be supported in our attack by a large

force of Stuka dive-bombers that will arrive here at 4:00 PM and by a protective artillery barrage from adjacent units and from some in the rear, which are now in action.

This battalion, reinforced, will attack at 4:00 PM to seize the crossing at Montherme and establish a bridgehead covering the construction of a division bridge.

The battalion, reinforced, will cross the river rapidly in waves commencing at 4:00 PM and will seize the French bunkers and other defensive positions as far south as a southeast-northwest line through hill 398 (pointing). Upon reaching this line it will be prepared for defense.

The attached 2 guns, 105-mm, self-propelled and the 2 howitzers will support the attack from present positions and will be prepared for prompt forward displacement. Fire will be placed initially on bunkers, MG nests and other defensive positions which cover the routes of our rubber boats.

The tank company will await orders in its present position prepared to support the crossing by fire and for subsequent attack to the south.

The platoon of engineers will launch the rubber boats and ferry troops across the river. As soon as a foothold is established on the south bank of the river, construction of the footbridge will be started.

All available fire power will be used to cover the crossing and will be transported to the south bank of the river at the earliest practicable moment. Rapidity of action is essential. Full advantage will be taken of the fog and it will be supplemented by the use of smoke. Men specially trained in the reduction of fortifications will be the first to cross the river. Lanes will be cut through the barbed wire defenses along the river and they will be marked by the first wave.

Administrative details later.

The CP will remain here until the foot bridge is completed at which time it will move to the south bank of the river.

Any questions?

If not—that is all.

Morale

By

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"Morale," said the colored man, "is what makes your laigs do what your haid knows ain't possible."—(Edgar Snow in *The Saturday Evening Post.*)

There are many apt definitions of morale. However, I shall make no attempt to supply another, for, like love, friendship and loyalty, it is a spiritual force; familiar to each one, but which each person uses different words to describe.

However, at the outset, we must distinguish clearly between morals and morale. A man may be a hot-headed, hard-hitting fighter who may be mixed up with every minor scrape that arises in his vicinity. You may have considerable doubt as to the state of his morals, but if he has loyalty to his leaders and won't know nor admit that he is licked, he may have just the morale we need in a fighting army.

Combat morale is the spiritual force that sustains a soldier, in the face of the horrors and fears of the battlefield, and enables him to overcome the instinct of self-preservation, which is an instinct that exists in all human beings. It holds him, together with his comrades, in obedience to the leader—as opposed to panic, in which the soldier gives way to instinct to safety and his personal welfare, each man for himself.

The Field Service Regulations state the following with reference to morale:

"Good morale and a sense of unity in a command cannot be improvised; they must be thoroughly planned and systematically promoted. They are born of just and fair treatment, a concern for the soldier's welfare, thorough training in basic duties, comradeship among men, and pride in self, organization and country. The establishment and maintenance of morale are incumbent upon every commander and are marks of good leadership."

Those are words, and words that apply to things of the spirit that you cannot see of themselves. But it is the duty of all officers, as leaders in our army, to see that those words have real meaning. By thoroughly planning and systematically promoting good morale and a sense of unity we must make these spiritual ideas manifest in all subordinates.

The promotion of good morale is a function of leadership. In fact, the quotation just given was from the chapter on "Leadership." There are some who contend that great leaders are born, not made. I agree with this contention, but I also know that leadership can be developed and bad leadership improved. There are concrete things that can be done to accomplish this.

In treating this subject, I propose to give you the information contained in official reports on morale methods used in the German and French Armies, and then discuss the methods proposed for our Army.

First, I shall quote from reports on morale methods in the German Army.

Morale in the German Army is built upon a solid foundation of universal obligation for military service. Only mental or physical incapacity can exempt a man from fulfilling that obligation. Considerations of politics, finance, profession or trade bear no weight. Thus soldiers know that there is no favoritism nor discrimination, and every exempt man is stamped as an inferior being who cannot qualify for the honor of serving his country under arms, a brotherhood that knows no class distinction.

The solidarity of all rank is exemplified in the German use of the military salute. The basic principle that the salute is a military greeting exchanged by brothers in arms is made real by the requirement that it be exchanged betweel *all* individuals in the military service. Thus the salute has ceased to be a caste symbol associated in the soldier's mind with the officer corps.

The mechanization of modern combat has not been allowed to interfere with the emphasis placed on the fighting qualities of the soldier. According to reports, much of the German success against the Allied Armies in May and June, 1940, grew out of the fact that, during the difficult winter months, the Germans built up combat morale by actual training, while the French emphasized the recreational aspects of morale activities.

The high morale with which German troops enter combat is founded upon confidence in their leadership. Soldiers are made to feel that officers know their business.

The spectacular successes of the German arms quite naturally have stimulated the morale of the troops, but observers agree that the most important reason for the high morale of the German Army is found in the superb leadership shown by line officers. Every soldier believes that his officer regards him as a hero or a potential hero in their country's cause. The classical Prussian type of leadership has been replaced by a relationship based upon mutual self-respect and confidence.

Contrary to the view most generally held, religion plays an important role in the German Army. Senior officers have made a point of attending religious services, and in some instances they make particular note of the attendance of their juniors.

In the field of entertainment, the German Army uses methods similar to our own—motion pictures, theatricals, music, reading, sports and radio. Radio is effectively used during campaigns; sound trucks are brought up to entertain and invigorate troops on the march, in bivouac and in the line. All entertainment is of a high order.

Wherever he may be the German soldier is kept abreast of important news developments. A field newspaper is published for the army and is complemented by radio broadcasts. Emphasis is placed on the importance of keeping the soldier so well informed that he will understand his own activities as part of the larger operation for his country's welfare.

Soldier singing is stimulated by every possible means, both for entertainment and for encouraging troops to greater effort in the field. Army songs rather than those with political significance are sung by the soldiers.

Many Iron Crosses are noted among the units which have seen combat. Reports indicate that the authority to award decorations has been most effectively used to strengthen morale.

Despite Germany's problem of supply, the food of the army is excellent. The combat arms are especially well-fed, and troops in combat are better fed than those in training areas.

At this point let me quote again the reference to our Field Service Regulations:

"Good morale and a sense of unity in a command cannot be improvised; they must be thoroughly planned and systematically promoted." Is there anyone who doubts the truth of that statement?

By the way of contrast let me now present extracts from the reports on morale in the French Army.

Three important elements entered into the morale problem of the French Army. They were: (1) the fact that France, morally unprepared for the fight, was taken into the war by political leaders without the formality of popular or parliamentary sanction; (2) the feeling among soldiers and their families that men who should have been in the army were being allowed to evade military service on specious pleas of indispensability in noncombatant fields; and (3) the fact that civilians rather than military men played dominant roles in the conduct of morale activities within the military establishment.

Both officers and men of the French Army have said that they entered the war without enthusiasm, and that this attitude matched the lack of enthusiasm among civilians. What little enthuiasm or spirit the troops had at the beginning of the war, was weakened by the monotony of hours in the Maginot Line.

Although reports stated that morale and general discipline were at a high pitch, there were indications to the contrary as early as November, 1939, within two months after the outbreak of war. Absence without leave was widely prevalent, and on Saturdays there were mass departures without authority, despite increased police details and many arrests. Men generally returned on Monday morning and were given ten days' extra duty as a penalty for their absence.

Observers visiting the front during the winter, began to question the validity of the general reports of the good morale of the soldiers. Concrete bits of evidence such as absence without leave, drinking and carelessness, were not in line with optimistic assertions of officers.

By March, 1940, the morale at the front had still further deteriorated. The soldiers grumbled because of long inaction. There was more and more discontent in camps behind the lines, with the men demanding to know what the war was about. Soldiers stated that their discontent had nothing to do with patriotism, but grew out of the feeling that something ought to be started. They spoke of the absence of drill or other activity behind the lines, where life held nothing but monotony. Growing discontent over inaction and discipline bred an urge to return to normal civilian life.

The outbreak of the war found the French Army without the machinery for the conduct of morale activities under proper military control. The morale problem which confronted the French Army and the methods haphazardly adopted for its solution combined to obscure the principle that morale as a function of command is a military function.

In certain exceptional cases, division commanders dominated morale activities within their jurisdiction, and in these units excellent results were obtained. Generally, however, morale activities were carried on from the civilian viewpoint of entertainment rather than from the military viewpoint of training. Officers lost contact with their men, and soldiers became more concerned with their personal comfort than with their military efficiency as part of a fighting team.

As needs became evident, civilians became active in raising funds and doing welfare work with governmental sanction.

The civil population was urged to send soldiers such articles as books, cigarettes and blankets. There was a shortage of blankets because a large number had been sent to the Spanish Loyalists. This circumstance occasioned bitter comment.

Recognition of the necessity for some form of amusement for the soldiers resulted in the establishment of Foyers Militaires. These had recreation halls equipped with games, reading and writing rooms, radios, and where wine could be procured.

Regiments had theaters at which improvised plays and sketches as well as professional performances were presented. Group singing was encouraged. In some organizations emphasis was placed on athletics.

When disaster overtook the French Army, the country was quick to place the blame on the Commander-in-Chief.

Those who had demanded a generous leave policy now censured him for furloughing soldiers who should have been retained to build blockhouses and trenches.

The soldiers themselves complained that for six crucial months they had been given little to do by way of preparing themselves to meet the enemy, and that instead, they had sat around writing letters and being entertained in idleness.

As expected, the army authorities were denounced for allowing morale work, a military function, to become a civilian welfare and entertainment activity. These denunciations now form part of the charges brought against General Gamelin and others formally accused of responsibility for the downfall of France.

The extracts just given are extracts from official reports, but it cannot be maintained that all authorities are in agreement as to the effects of the various forms of morale activities.

Contrasting the morale methods of France and Germany we might draw the conclusion that the German methods were wholly right, and the only ones that would lead to success. So let us look at the British. Certainly, no one can say that there is very much wrong with British morale. And yet, the British are carrying out in general very much the same system they used in World War I, in which the YMCA plays a dominant part. The more pronounced changes involve placing greater stress on religion, and a more agreeable form of physical training. Instead of wearing the soldier out with endless and uninteresting setting-up exercises, every form of physical exercise is combined with recreational training in various kinds of sports and games.

That is what is proving successful for the British. It seems apparent therefore, that the morale methods, to be successful must be adapted to the national characteristics of the people.

The lessons to be derived from the foregoing account of morale methods appear obvious. Among these lessons we may select certain ones that are outstanding.

To begin with, it is confirmed that morale is a function of command—a military function, and those matters of recreation and welfare that pertain to morale should be controlled by the military.

High morale must have a solid foundation in efficient training. While the German Army trained hard all through the winter its morale rose higher and higher, while that of the French went lower and lower, due to inactivity and lack of constructive training.

Inactivity breeds discontent and lowers morale.

There must be a spirit of unity for the development of high morale. This must include national unity embracing both civilians and the military.

Another outstanding lesson is confirmed, that monotony is destructive of morale. This is true whether it be monotony of training, inaction, or even recreation. Welfare and recreational activities have the sole object of breaking the monotony of training. Such activities, unless balanced by hard and effective training, will have a weakening rather than a strengthening effect.

There are three correlative elements essential to a fully effective fighting force. These are: training, equipment and morale. The first essential is continuous, effective and progressive combat training. Even though an army has a high morale it will be ineffective if it lacks training and modern weapons. Its morale in this case is based on a false confidence and is not sound.

Poland furnished an excellent example. The morale of the Polish Army, and of the populace, was high. Most of the army—officers and men—definitely believed they could defeat the Germans. But Poland, with all its high morale, was crushed in three weeks because she was attacked by an army that had not only an equal or superior morale, but an army, mechanized force and air force which had reached a perfection of training beyond anything the Poles had conceived.

Bearing the above lessons in mind let us now consider the steps that are being taken to build morale in our army. Early in the mobilization our Chief of Staff addressed a letter on the subject of morale and discipline to the army. He said in small part, "The task now looming before us is the expeditious development of a unified, efficient fighting force of citizen soldiers.

"First in importance will be the development of a high morale and the building of a sound discipline, based on wise leadership and a spirit of mutual cooperation throughout all ranks. Morale, engendered by thoughtful consideration for officers and enlisted men by their commanders, will produce a cheerful and understanding subordination of the individual to the good of the team. This is the essence of the American standard of discipline, and it is a primary responsibility of leaders to develop and maintain such a standard. To this end, commanders of all echelons are directed to study and apply the provisions of Mobilization Regulations 1-10 regarding morale."

Let us see what has been done in our army to clinch the lessons in the building of morale, which seem to be so obvious, and to carry out the directive of the Chief of Staff.

First and foremost—in my opinion—it was not our recreation nor our athletic program, nor was it our welfare program—but the 44-hour training week under the Mobilization Training Program. If carried out effectively it should have assured that our men would be kept busy in live, effective and progressive training. This would build the soundest basis for morale—confidence and pride of the soldier in himself and in his organization.

Complementing the training program and to balance it, the provisions of Mobilization Regulations 1-10, providing the organization for recreational and welfare morale work, have been made effective.

A morale division was established in the Adjutant General's Office, which was the operating agency in the War Department. Corresponding oganizations were found in the Adjutant General's section of divisions and other units having a general staff group.

The appreciation of the importance of the morale factor has been growing, particularly among our senior officers, led by the chief of staff. Consequently, as a result of a Morale Conference held in Washington, attended by representatives of all major military units in continental United States, a separate Morale Branch was organized in the War Department. The new organization calls for a Morale Officer as a special staff officer in divisions and higher units and at posts where conditions warrant.

In the headquarters of separate battalions and of larger units, a minimum of one officer, other than a chaplain, is designated as the recreation officer. The officers so assigned

have been called, "Morale Officers," "Recreation Officers," "Welfare Officers," or "Athletic Officers." Irrespective of their designation their responsibility for all forms of morale activities is the same.

The recreational and welfare activities that form part of the military program consist of:

Service Clubs with hostess service
Organizational Clubs
Libraries
Publications
Theaters
Athletics
Post Exchanges
The American Red Cross information and home service
Recreation areas

These are all under military control and no civilian agent except the Red Cross, may operate within an army camp or station.

A high ranking officer is reputed to have said, "An army properly fed, housed and led by well-trained and competent officers will develop plenty of morale." He cast doubts on the need of so many of the measures to promote an atmosphere of sweetness and light in and around army camps. The thing that is hidden in this broad statement is that the "well-trained and competent officers" will provide such recreational and welfare activities as may be necessary to maintain morale.

There was a time when the publicity concerning the army recreation and welfare led me to believe that it was being over-emphasized. My ideas have changed. When you consider 20,000 or 30,000 men living together in a camp that is constructed in the middle of nowhere, there must be something for them to do, after they have put in 8 hours of training during the day.

Recreation might be improvised for a group even as large as several hundred. For the thousands in our camps, however, carefully organized means for recreation, amusement and relaxation must be provided. It is right and reasonable, and as long as it is balanced by good hard work in training, we need have no fear of any expansion of these recreational activities within our camps.

My own observations confirmed by many reports, indicate that initially our recruits are as fine material as any officer could desire for his unit, full of ambition and eager to learn.

Assuming then that this is correct, that we have raw material that meets all specifications, what is the one thing that is needed to assure that we will have a superior army as far as personnel and morale are concerned?

The answer undoubtedly is "leadership," and particularly the leadership of the company of battery officers. Most of our army is new, and particularly the officers in the lower grades, many of whom have had little experience in handling men. Dare we turn this fine material over to new officers without giving them helpful guidance in the way to instill into their men that feeling of unity and loyalty that constitutes morale? That is the duty of the next higher commander in each instance.

As leadership improves, problems of morale and discipline fade into insignificance. The first precept of leadership is: know your men. The division commander must know his regimental commanders, their personalities, their capabilities, and the manner in which they are exercising their leadership, and he should know his battalion commanders and company commanders as well. The battalion commanders should certainly know their company commanders and how their companies are getting along. The more experienced officers must guide the younger or newer officers in connection with their contacts with and the handling of men.

There are certain rules which may almost be considered axioms, for guidance in the exercise of leadership or the management of men. Included in these are such truths as:

Take care of your men and they will take care of you.
Be natural, honest and sincere. A "stuffed shirt" will never get anywhere with his men.

The strict and inflexible type of discipline, known as Prussian discipline, is out, and if an officer is sincere and does not try to be something he is not, his men will show him loyalty which is the most gratifying thing in the military service.

Everything presented to the men must give an idea of a unity of the leaders with the men. There must be definite objectives that are reasonably obtainable, constantly before the unit.

Many of these ideas of leadership exist in the minds of most men, for it is nothing more than an understanding of human nature. However, the thoughts have been lying dormant in many of those minds, due to the pressing requirements of the immediate problems to be faced each day.

These thoughts, therefore, need to be refreshed to the point where they bring action, and that action will result in greatly improved leadership throughout all ranks. This is the basic requirement for impoving morale and discipline.

An improvement of leadership has, in the past, been dependent upon indirection and chance. It can only be obtained objectively if a course of instruction in *practical* leadership shall be put into effect in our army.

Combat morale is a result of those acts of leadership which create a sense of unity with the leader, training which gives a sense of confidence, and an objective that inspires a soldier to give even his life, to attain.

Finally let me bring out this thought. We are securing for our army the best human material our army has ever known. When the production lines get to rolling we shall have more and better equipment than we have ever known. Whether our army is to become the finest that we have ever known, with a morale that will never accept defeat, is directly dependent upon the quality and character of our officers, and the morale they instill into their subordinates, from the highest echelon down.

River Crossings

By

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"Of all obstacles which cover the frontiers of empires, a desert is certainly the greatest; a chain of mountains like the Alps holds second rank; rivers, the third."

With those words Napoleon expressed himself a century and a quarter ago and although the order *may* have been altered by modern mobility and firepower on the ground and in the air no one would question but what all three obstacles still continue to challenge man's ingenuity in warfare.

The Little Corporal further expressed himself by saying "It is difficult to prevent an army equipped with a good ponton train from crossing a river," and time has yet to disprove the truth of this statement.

In this article, I propose to deal with river crossing operations of the most difficult type; namely those in the face of a determined enemy. The impact of modern technique and equipment on such actions will be explored but no detailed discussion of equipment will be undertaken nor will the crossing of narrow streams that can be bridged by fixed bridges be considered.

In a campaign along an extended front it is frequently possible to secure a crossing and turn an enemy's flank by utilizing superior mobility and surprise. The initial force must be sufficient to hold a bridgehead and not lose the advantage gained through surprise. Supporting troops must be pushed forward to the ultimate limit of their capacity to reinforce, extend and consolidate gains made. The relative speed in supporting or contesting footholds gained on the far shore will frequently determine the success or failure of the effort. Close and adequate air support is likewise a vital factor.

Confining ourselves to a crossing that must be forced, for any one of several plausible reasons, along say a division front, we find ourselves guided by the following doctrines as set forth in FM 100-5.

"When the enemy is already in possession of a river line which cannot be turned, the cossing must be forced. Under favorable conditions, a river crossing may be forced by rapid and audacious methods. This is accomplished by a bold attack by troops transported by air and by mobile ground forces strong in armored vehicles, bridge equipage, and fast motor boats, strongly supported by bombardment aviation. These forces seize the bridges before the defenders can complete their destruction. If the bridges have been destroyed, the covering forces are put across in motor boats. At the same time bridges are constructed rapidly under hostile fire and the initial surprise so gained is exploited fully.

"In the absence of such favorable conditions, a more deliberate operation is required. Hostile troops are promptly driven across the river, and systematic preparations to force a crossing are initiated.

"In an operation involving the crossing of a river, the actual crossing is a means, not the end sought. The immediate purpose is to get across quickly and economically and establish a bridgehead which will protect the crossing of the remainder of the command.

"In establishing a bridgehead for a large force there are usually three successive objectives on the enemy side of the river: first, a position which will eliminate effective, direct, small-arms fire from the crossing front; second, a position which will eliminate ground-observed artillery fire from the selected ponton bridge site(s) and which can be supported by light artillery on the attacker's side of the river; third, a position which will eliminate all artillery fire from the bridge site(s) and will provide the necessary maneuver space on the enemy side of the river for the command. Attainment of the first objective facilitates the crossing of succeeding troops by assault boats, foot bridges, and troop and vehicle ferries. Attainment of the second objective, coupled with air supremacy, normally will make possible the construction of ponton bridges to cross the bulk of heavier loads. Attainment of the third objective, coupled with air supremacy, gives uninterrupted use of crossing means over the river, permits the protected maneuver of troops in furtherance of their mission, and facilitates the accumulation of supplies on the enemy side of the river.

"The assignment of river crossing objectives or missions to units must allow sufficient freedom to subordinate commanders so that successes can be fully exploited."

Generally speaking, this technique is based on river crossings in Europe. While these conform to the general pattern laid down in our Field Service Regulations, the following points are of special interest: (1) neutralization and localization of hostile defense efforts due to close and powerful air support and artillery fires, (2) intensive application of the principle of surprise by the use of parachute troops, assault units in power boats and other means, (3) improved equipment, and (4) the massing of armored and other forces to exploit the crossing without delay. Let us consider these points briefly.

First, there is the question of air support. To be effective it must be definitely superior over the locality involved when needed. Observation planes with competent observers should contribute greatly to the success of such an operation by prompt report of weak spots or strong points as well as by spotting the location of artillery and reserves. At times, heavy ground cover will preclude any such observations but in critical situations planes must be prepared to secure such information, if at all possible even at great risk. Attack and light bombardment aviation both dive and level, with fighter protection must be in close support. In addition to normal missions it must be prepared to take over other missions if necessary such as when the lapse during displacement forward or for other reasons leaves suitable targets that cannot be covered by emplaced weapons.

The full and proper utilization of air forces requires the closest coordination between the commander of the entire operation and the air support commander. The exact methods used to provide the needed support are the responsibility of the air support commander. The thorough training of all elements of the combined arms, including air, is of vital importance.

As for artillery—the development and use of assault artillery has greatly increased the fire effect obtained during early stages of the crossing. High velocity, flat trajectory weapons such as the German dual-purpose, anti-aircraft-antitank gun of 88-mm caliber are essential weapons in such an attack. These splendid weapons, frequently self-propelled, with armor protection for the crew, are used at ranges as close as 400 yards. Enemy machine-gun nests within range are quickly silenced and even enemy antitank or artillery weapons placed along the far shore can be neutralized by a superior massing of means by the attacker.

Due to the difficulty of accurately determining time schedules for supporting fires after the crossing has been made, close cooperation and communication with supporting artillery must be maintained.

The second change to be noted is in the application of the principle of surprise. The 1918 tempo called for surprise as to the crossing points involved and by the maintenance of secrecy during the operation if possible. Slow methods of propulsion, small numbers of boats and other factors relegated the value of the surprise element to a minor place. This is not so today. Once the crossing has been launched it is a question of speed and more speed. Power-propelled assault boats sometimes called storm boats, are used in large numbers to literally throw battalions across. Imagine crossing the Rhine successfully in front of the Maginot Line with an infantry battalion in seventeen minutes. Yes, once the jump-off is made, any further surprise can be secured better through speed than through secrecy.

Here also air-borne troops can play their part. Against a position thoroughly reconnoitered by one or all of several means, parachute troops sometimes supported by air-landing troops, can raise havoc at the critical time by cutting communications, harassing reserves, disrupting artillery, capturing installations and contributing to the general confusion.

False crossing fronts, unorthodox methods, unusual hours for launching attacks and other means can be utilized also to deceive an enemy who is not constantly alert.

Our third consideration, namely, improved equipment has been an important factor in enhancing the surprise elements as mentioned above. The weight of the initial thrust cannot be felt fully until reinforcements, artillery and supplies can push forward and here improved ponton equipage plays an important part. Engineers are challenged today as never before in this respect. From 1869 to 1918, yes even until 1938, most changes were occasioned by increased loads without enough attention being devoted to speed of construction. The speed of present day operations had not been correctly predicted. In one 250-foot unit of ponton bridge, there are roughly 1000 parts and over 2000 separate operations are necessary to assemble it. Now where the flooring for fifteen feet of the new steel tread, rubber inflated ponton bridge such as our armored divisions carry requires two pieces—one tread for each wheel track —the older and heavier models require approximately 23 pieces (16 chess or planks and 12 balk for stringers and guard rails) besides several clamps and fasteners. The time required is not in proportion to the number of involved parts but the new bridge was just assembled in the Carolinas in about one-third the time it took for the old type in Louisiana in September. Of course, the problem of crossing heavy tanks is a tremendous one but ways will be found to do it more expeditiously even with the heavy equipment required. Various improvements are under way and perhaps, our present 10-ton ponton or one slightly larger with a flush deck and girder or rigid truss treads of less span will answer the problem. It would be presumptuous for me to predict what will evolve but the idea mentioned above combines several fields of experimentation. I have seen several 10-ton pontons properly spaced under the portable, H-10, truss bridge support a load of 35 tons. Enough on pontons.

The use of the newly developed "alligators" or amphibian tanks and perhaps the Higgins "Eureka" boats designed for landing operations must also be considered in connection with future river crossings where streams of any considerable widths are involved.

Our present, paddle-propelled assault boats will be supplemented by power assault boats such as the Germans used at Breisach making round trips across the 200-yard wide Rhine in about one minute. Small rubber, inflated boats will likewise be available for reconnaissance units and other purposes where economy of space for transportation is desirable.

Now comes point number four—the rapid crossing of armored and other forces as soon as the bridgehead has been seized. The bridging problem has been mentioned. It is not enough to cross riflemen. Even the initial elements will take machine guns and infantry mortars over in their assault boats. Then "jeeps" (bantam cars), motorcycles, antitank guns and weapons and ammunition carriers must be pushed across on assault or ponton boat ferries or anything else the ingenuity of the engineers can devise. Finally, on ponton bridges, artillery and supply vehicles push forward, accompanied or followed as soon as possible by armored vehicles including tanks. Speed in this phase spells success—and life to those courageous elements taking the brunt of the battle on the far shore.

Such bridges were formerly built when ground-observed artillery fire had been eliminated from the crossing point which sometimes required the capture of a bridgehead several thousand yards deep. The delay involved frequently permitted the defender to counterattack and eject the attacker before the latter had secured his gains. By the use of accurate fires, smoke, and combat aviation against the defenders artillery, the construction of bridges can and must be initiated sooner—as soon as small-arms fire can be eliminated from the crossing site perhaps.

Let us turn now to an imaginary crossing and consider a plan of operations. Opposing forces are in contact along a river line. We are an interior unit and must force the crossing in our sector.

A careful study of possible crossing points and terrain on the far shore based on thorough technical and tactical reconnaissance led to the selection of a definite plan. Maps, vertical and oblique aerial photographs, and reports of ground patrols and special agents all contributed to the

decision. Arrangements by the unit engineer, after the tactical plan was adopted, resulted in the procurement of ample stream crossing equipment which was moved up to concealed locations under cover of darkness. Extra engineer troops were attached from higher headquarters. Officers, noncommissioned officers and guides were then thoroughly schooled in the exact plans for the crossing involving assault boats, ferries and the ponton bridges. Routes were reconnoitered and time schedules worked out.

In the meantime, the necessary orders were issued to put the tactical plan into effect. Intelligence reports were studied and both known and probable enemy positions were plotted on aerial photographs. These were made available to all officers to study—the low-level obliques being particularly valuable for studying areas and routes of advance. Guides were sent to contact the engineers and coordinate the approach march to the shore. During the period preceding the attack, assault battalions, assembled well to the rear, rehearsed movements to designated points in small groups both in daylight and under cover of darkness and simulated attack in staggered and broken groups to stress self-reliance of groups and individuals and the need to regain tactical unity and communications with adjacent and higher units quickly after reaching the far shore.

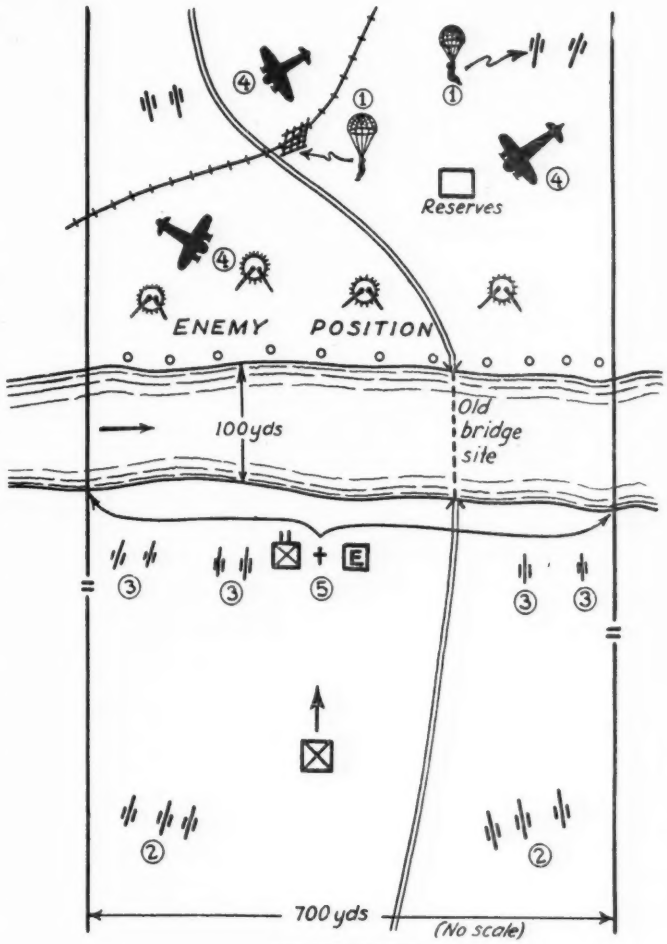
Artillery checked their surveys and prepared to furnish accurate and prompt supporting fires. The attached air support commander and his staff met with the ground commander and his staff to coordinate details as to plan, time schedules, location of expected obstacles and targets and signal communications. Panel, pyrotechnic and radio communications were practiced in rear areas, by air and ground personnel. Plans for the use of smoke and gas were completed, extra ammunition was brought up and all other administrative arrangements checked.

One battalion of parachute troops were to be dropped in the rear of the enemy with instructions to seize and destroy two critical bridges, disrupt enemy communications in the rear, harass certain specified artillery positions and push forward toward advanced infantry positions. Their efforts were closely coordinated with those of the ground arms, particularly the artillery.

The attack jumped off at H + ten minutes after a short but intense artillery preparation. One assault battalion for example, had 40 power assault boats and 40 paddle assault boats some of which were made into small ferries to get antitank guns and jeeps over quickly. The stream was 100 yards wide but the battalion crossed in eight minutes with only moderate losses thanks to speed, surprise, individual aggressiveness and well coordinated support from air, artillery and infantry supporting weapons. Enemy observation posts were blinded by smoke and their arilllery fire was neutralized by our fires, air bombardment and daring sorties by parachute units. Careful planning had paid dividends. By H + 30 minutes the battalion was advancing the bridgehead by well coordinated efforts and reinforcements were pouring across. The tempo of the crossing increased. The inflated rubber ponton bridge was started at this time and by H + 1:30 hours infantry division vehicles were starting to cross. All means of crossing continued to be used to capacity. Air and artillery provided increasing support.

By H + 2:30 hours, heavy ponton equipage was unloading and by H + 4 hours, GHQ tank battalions were being ferried to join the assaulting units and exploit the success. With the completion of the heavy ponton bridge at H + 7 hours, tanks, guns and supplies were crossed rapidly.

It can be done. It requires unity of command, thoroughness in training, careful preparation and coordination and the indomitable will of every officer and man to push through with all speed. The situation must be carefully appraised but once it has been determined to be worth the probable cost all elements must be pushed to the limit of their capacity—and then pushed again—in a thoroughly coordinated assault.



River Crossing

Above is a schematic diagram of one sector of a river crossing operation in the face of the enemy with a time schedule setting forth a possible sequence of events.

Time Schedule

H Hour	Parachute troops (1) dropped in rear of enemy positions and at critical points. Artillery preparation begins. (2)
H + 10 min.	Supporting artillery (2) fire lifts to other targets farther from river bank. Assault artillery (3) fires point blank on enemy fortifications. Combat aviation (4) attacks enemy troops and fortifications within small arms range of the shore.
	Storm boats cross initial waves of engineers and infantry (5). Air and artillery support concentrate on objectives farther from shore.
H + 25 min.	All operations continue at maximum tempo with troops and supplies being pushed across. Mortars, AT guns and bantam cars are crossed on ferries.
H + 30 min.	Construction of light ponton bridge started.
H + 1:30 hrs.	Bridge completed. Inf Div loads crossing.
H + 3:00 hrs.	Construction of heavy ponton bridge started.
H + 4:00 hrs.	Artillery and armored vehicles crossing by ferries.
H + 7:00 hrs.	Heavy ponton bridge completed.

Army Air Forces

BY

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Editor's Note:—Since the preparation of this article and the accompanying chart, the Service Command in each Air Force has been redesignated the Air Force Base Command. The Maintenance Command under the Chief of Air Corps has been inactivated and an Air Service Command has been established to replace it. However, these changes do not materially affect the general organization, are merely for easier supply and maintenance and do not prevent the reader from getting a good picture of the Army Air Force as it is today.

This article is written for the purpose of putting in a condensed form the highlights of the organization of the Army Air Forces. It is hoped that it will be of some benefit to service personnel who have had no opportunity to individually study this arm, nor attend service schools during the past few months. Although a few general statements are included relative to the support of ground troops by aviation, no attempt has been made to fully cover that phase nor have other phases of the use of aviation been included.

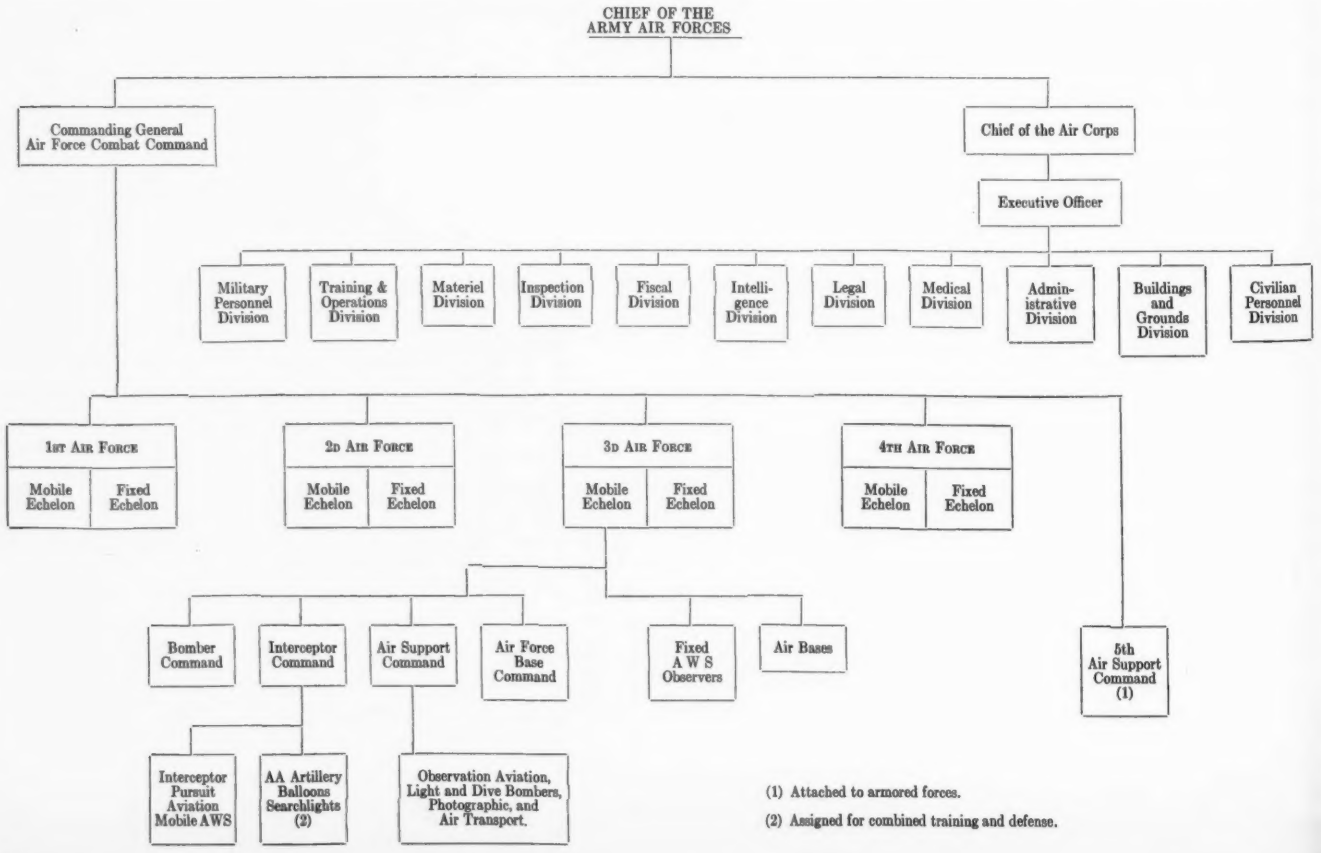
The air component of the Army of the United States is known as the Army Air Forces. It consists of three main elements, namely: Headquarters Army Air Forces, Air Force Combat Command, and Air Corps.

1. The headquarters of the Army Air Forces consists of a Chief of the Army Air Forces who is assisted by a complete staff organized along the lines of the War Department General Staff. For instance there is an Air Chief of Staff, an Air Adjutant General, an Air War Plans Division and a complete Air Staff designated as, A-1 (Personnel), A-2 (Intelligence), A-3 (Operations), A-4 (Supply). Subject to policies and instructions from the War Department the headquarters of the Army Air Forces controls and coordinates the employment of the Air Force Combat Command and the Air Corps; it plans and studies all the broader phases of aviation problems; it controls directly all air units that are assigned to commands outside the continental United States.

2. The Air Force Combat Command consists of the Commanding General of the Air Force Combat Command and a complete general staff, organized like all other general staffs. Under instructions and directives from the Chief of the Army Air Forces, the Air Force Combat Command is charged with the following duties:

a. Control of all aerial operations of the Air Force Combat Command except for those units thereof assigned to overseas garrisons or under other commanders.

b. The preparation of plans for the aerial defense of continental United States.



c. Recommendations to the Chief of the Army Air Forces relative to personnel, equipment, supplies or facilities needed to maintain or improve the efficiency of the Air Force Combat Command.

d. The organization of the Air Force Combat Command, its preparation for combat to include the development of doctrines and air tactics and technique of air forces.

e. The command and control of all Air Force Combat Command stations and all personnel and installations thereon including station complement personnel and activities.

f. Court-martial jurisdiction over all elements of the Air Force Combat Command.

g. In addition it has the ordinary supply and maintenance functions necessary to proper operations as well as the technical inspection of its units.

All air tactical units within the United States proper are assigned to the Air Force Combat Command. These units are grouped into four Air Forces which are organized exactly alike. The fixed echelon of each Air Force consists first of the bases or airdromes from which operations are conducted, and second of the fixed Air Warning Service. The latter is a system of reporting stations scattered throughout an area for the purpose of giving to a central information center, the data on aircraft which pass that station. The mobile echelon of each Air Force consists of three Tactical Commands and a Service Command. A brief description of each follows—

The Bomber Command.—The striking part of each Air Force contains heavy bombardment, medium bombardment, reconnaissance, and fighter types of aircraft. This command operates offensively against any target on the surface of the earth. On the way to or from a mission, Bombardment seeks to avoid combat with enemy aircraft; its machine guns are purely for defense. The fighter types do not carry heavy bomb loads; their function is to engage in aerial combat the enemy aircraft which may seek to interfere with the mission of our bombers.

The Interceptor Command.—The defensive member of each Air Force, consists entirely of Interceptor aircraft whose primary fuction is the interception and destruction, by air fighting, of all enemy aircraft. This command can be employed to oppose air attacks against any fixed installation, manufacturing center or city, or it may be used in the field to oppose all air action of the enemy. Although the Interceptor Command is a defensive force, it can accomplish its mission only by offensive action against enemy aircraft. When the Air Warning Service (either fixed or mobile) reports the presence of enemy planes in a locality, Interceptors are dispatched to meet them and destroy them by air fighting. Where no Air Warning Service is possible, the Interceptor Command stations units on "air alert" or sends out fighting patrols to oppose enemy air action. Signal troops, to operate either a fixed or mobile air warning service, are a part of the Interceptor Command. Antiaircraft artillery may be attached whenever necessary.

The Air Support Command is the cooperative part of each Air Force designed to give close support to ground forces and is therefore composed of types of aircraft which will be most suitable for that task. They are observation, light bomber, and the dive bomber. Should other types be necessary for the support of forces in the field, they may be temporarily attached to the Air Support Command or the task may be performed by one of the other commands.

Lastly there is a *Service Command* whose function is to facilitate the operations of the other three and whose existence springs from the fact that tactical units should be free to conduct tactical operations only. The supply of combat units in the field and the operations of all air base facilities will constitute the primary function of the Service Command.

Each Command necessarily has its units organized into Wings, Groups or Squadrons. Air Units are generally triangular in their organization; that is the Wings have three tactical groups, the groups have three tactical squadrons and squadrons have three tactical flights. Pursuit and Dive Bombardment Squadrons have 25 airplanes assigned; Heavy Bombardment or Reconnaissance Squadrons each have 8 airplanes and all other Squadrons of whatever types have 13.

3. The Air Corps is the third major part of the Army Air Forces. Maintenance, training, and the procurement of all personnel and supplies are its most important functions. For instance, the Training and Operations Division of the office of the Chief of Air Corps supervises three Training Centers where personnel are trained in pilot, bombardier or navigator duties. The Technical Command charged with the training of 100,000 mechanics a year is under the same division. Under the Materiel Division we find a Maintenance Command, a technical research and development branch and others equally important but too numerous to mention.

The above organization was arrived at after years of experimenting and development. The main feature of it is that it is headed directly to the War Department. There and only there will be decided the type of warfare in which our air units will engage. The Air Forces could be directed to wage aerial warfare, entirely independently of the land or naval forces, or all Air Forces could be employed for the support of ground forces. The Superior Commander alone is able to assign the proper general task for each of the naval forces, land forces and air forces; the three must be aimed at the same general goal, each must be able to assist the others and each must be capable of meeting the realities of any situation by acting largely without the help of the others if necessary. Our organization must then be such that we shall be capable of acting independently throughout a campaign or quickly change all or part of the force to the mission of supporting either land or naval forces. Moreover the Air Force, when so directed, must accept the responsibility of rendering all needed support to the ground forces—training of both air and ground staffs becomes imperative.

Some parts of the present conflict have forcibly brought home the necessity of air support for all ground operations. Every successful operation had effective air support, and this effectiveness, either close or far away from the supported ground forces, was based on superiority or dominance of the air. Air advantage becomes the road over which all other operations must travel. The following principles, taken from a text of the Air Corps Tactical School, remain the best guide to the employment of aviation in support of ground troops. They are:

(1) The mission of the supporting air force is the furtherance of the mission of the ground force.

(2) The hostile air force must not be permitted to execute air attacks or air reconnaissance; hence, counter-air force operations must be initiated at the very beginning.

(3) Aviation should be employed primarily for the accomplishment of tasks that cannot be performed by other weapons.

(4) Air attacks are not profitable against dispersed enemy troops; nor must the objective be of secondary importance. It must be sufficiently important to warrant acceptance of the risk involved.

(5) Air attacks are not made within the effective range of friendly artillery, except in emergencies.

In the application of the above principles it must be appreciated that the hostile rear area is the normal zone of operations for aircraft since all serious threats to the supported force originate there, and because the targets, being more concentrated, are more vulnerable to air attacks. Likewise it should be remembered that aviation is a theater of operations weapon; that it has great range, speed, flexibility, and that it should be employed in mass for decisive results. We should, therefore, centralize the control for its operation. Our study and experience lead us to believe that the proper place to centralize the control of close support aviation is in the Army. From that headquarters it is practical to render quick and efficient close support with the normal equipment found in an Air Support Command; special situations will have to have special consideration. The Air Support Command has the responsibility of furnishing close and adequate support and it is being trained for that special function.

The Cavalry Replacement Training Center

By

Brigadier General Harry D. Chamberlin

A thorough knowledge of fundamentals is as essential in military training as in all other fields of human endeavor. Correct instruction in basic training not only makes better soldiers, but saves time which is most important in this emergency.

The Replacement Training Center idea is a logical solution of the problem of training large numbers of men in their basic duties rapidly and thoroughly. At the end of his thirteen weeks' course the trainee is capable of taking his place and doing his job in the unit to which assigned. Through taking advantage of the outstanding characteristics of the American people: initiative, self-reliance and tenacity of purpose, and developing and moulding them into individuals and units the results have been remarkable. Benefits are twofold; first, all trainees receive the same instruction and are brought to a high state of efficiency so that when they are transferred to organizations they are able to meet the highest requirements; and second, combat units are relieved of the necessity of giving individual basic instruction, as such, and can concentrate their efforts on the development of combat efficiency.

The Cavalry Replacement Training Center is located at Fort Riley, Kansas. It is the only such Training Center for cavalry in the country, and receives and trains all replacements for cavalry regardless of origin. Its problems are somewhat different from those of other training centers. This will be readily understood when it is recalled that cavalry fights both mounted and dismounted, on horses, motorcycles, scout cars, tanks and jeeps and that training must be sufficiently diversified to fit the trainee for the particular type of service he is to perform. The cavalry trooper must be trained in the use of all cavalry weapons from the pistol to the antitank gun. He must be imbued with a spirit of daring and self-reliance so that he will not become confused in the rapidly changing situations with which his arm must cope.

Construction of the Replacement Center began December 9, 1940. The first trainees began arriving March 15, 1941. Since that time 5,531 white and 372 colored trainees have been horse trained, 3,709 white and 378 colored have been motor trained. At the present time there are 5,594 white and 439 colored trainees undergoing their basic instruction.

The physical plant resembles that of other Replacement Centers, with accommodations for 6,100 trainees, 1,100 cadremen, and 214 officers. Training areas are located close to camp to which each unit may move without interfering with the activities of other units. Target facilities for 2,000 men working simultaneously are available for rifle, pistol and machine-gun instruction.

The tables of organization provide for a headquarters and headquarters troop, six squadrons of four troops each and two squadrons of two troops each. One of these squadrons is composed of colored trainees. These squadrons are grouped into four regiments.

Training at the Cavalry Replacement Training Center is based on Mobilization Training Program 2-2, War Department, November 12, 1940, revised. In order to standardize training, three functional departments have been organized. Their schedules are coordinated by the S-3 office. Each department has a chief, separate staff, and a corps of instructors who supervise training and are responsible for adherence to the master schedule as well as the quality of training given and progress made. The unit officers of troops, squadrons and regiments are jointly responsible for the results obtained. The usual methods of instruction, lectures, demonstrations and practical exercises supplemented by training films are employed in all departments. Special buildings are provided for class rooms and lectures.

A master schedule has been prepared, based on a 44-hour training week of five 8-hour days and one 4-hour day. Each 8-hour training day is divided into three 2½-hour instructional periods allotted equally to basic, weapons, horse-

manship or motors. Horsemanship and motor instruction are conducted concurrently for men destined for horse and motor units respectively. From Monday to Friday inclusive all selectees have physical training for thirty minutes each morning previous to the start of the first 2½-hour instruction period. Saturday mornings are devoted to inspections and open hours not assigned to specific subjects. Instructors note the proficiency of any outstanding trainees in order that such men may be recommended for specific duties upon assigned to combat organizations or retained in the cadre as instructors.

Instruction in the weapons department consists of training in the maintenance, operation and use of cavalry weapons to include the M-1 and M-1903 rifles; caliber .45 pistol, caliber .30 machine gun, air- and water-cooled, caliber .50 machine gun, 81-mm mortars and the antitank gun. In general, the scope of training follows the procedure indicated in the field manuals. The objective is the preparation of the trainee to fire his weapons so as to completely exploit their powers on the battlefield. Qualification as prescribed in Mobilization Training Program 2-2 is an immediate objective. Rifle instruction is carried out so as to give a thorough course of preliminary instruction in both the M-1 and M-1903 rifles. The preliminary course is repeated before any firing is attempted. Record firing is conducted with the M-1 rifle and combat firing with the M-1903 rifle. Pistol firing is carried on concurrently with machine-gun instruction. The training with machine guns includes mechanical instruction, preliminary marksmanship, 1000-inch range and field firing at ranges up to 1200 yards.

The motors department has as its objective the qualification of all motor trainees in the operation and first echelon maintenance of military vehicles. Instruction includes the operation of vehicles in formations and as individuals under all conditions of road, terrain and weather. The motors department is broken down into five divisions: motorcycle, bantam, scout car, tank, and truck. Personnel is selected for these divisions according to their previous experience in order to exploit their talents and gain time. Motorcycle riders, preferably the heavier men, are assigned to the motorcycle division. Taxi-drivers are assigned to the bantam division. Drivers of light trucks go to the scout car division. Operators of light farm or road grading tractors are preferred for the tank division and drivers of heavy trucks and tractor-trailer jobs go to the truck division. All these men are given a week's ground school to familiarize them with military requirements and to break them of bad driving habits they may have acquired, after which they are placed behind the wheel to begin driving. This department has allotted for training purposes 22 motorcycles, 39 jeeps, 78 scout cars, 100 trucks, 9 five-passenger sedans, one 4-ton heavy wrecker, one 2½-ton semi-trailer, one one-half track mortar carrier, and three light tanks.

The objective of the horsemanship department is to qualify each trainee in the horse troops as a competent horseman. He is able, on completion of the course, to manage his horse individually and in ranks, at all gaits over varied terrain; to execute well all mounted movements of the squad and platoon, including approach formations, combat formations and the mounted attack. He is taught to care for his horse and equipment under varying conditions of bivouac, marches, rail and motor movements, and to fire his pistol when mounted. Emphasis is placed on smoothness of all mounted formations. A total of 160 hours is devoted to training by the department of horsemanship. An effort is made to develop in each man genuine love for the horse. The training period for the first week is spent in dismounted work around the horses and stables. Since many men have never been near a horse before, this tends to overcome any fear or apprehension they may have before mounting. As the course progresses instruction is given in equitation, mounted drill, mounted scouting and patrolling, mounted combat, mounted pistol firing, marches, and loading and unloading for portee movements. The department has approximately 1800 horses. They are gentled before being assigned to the selectee and in general, suited for the work at hand.

Instruction is given by sergeant and corporal instructors under the general supervision of the department officers. Each noncommissioned officer instructs a group of approximately twenty-five trainees. Department officers are assisted by the officers and noncommissioned officers of the training troop.

The efficient operation of an installation of this type with its constantly changing personnel would be impossible without a Classification Section. This unit has functioned from the beginning to place men in accordance with their qualifications and desires, so that they may receive the greatest benefits from their training. Each man is interviewed briefly on arrival and assigned to a motor or horse unit. This assignment is based on past employment, the man's desire and the need of the service. The initial assignment is in itself a classification process, and places the man in proper organizations so that their enthusiasm and desire to make soldiers of themselves will be facilitated. The classification process is a continuing one. It begins with the sorting and correction of the qualification cards received from the reception centers, and follows up by adding more information, the giving of mechanical and clerical aptitude tests, testing of occupational specialists and their selection for key positions. A unique example of the thoroughness of classification was experienced recently during the visit of a group of Latin American officers to the Center. Two of these officers spoke only Portuguese so the classification section was asked to locate an interpreter. They immediately came up with a trainee who spoke the language fluently, much to the pleasure of the visitors and relief of the officers in charge.

The messes at the Cavalry Replacement Training Center are one of its outstanding features. Nothing is as conducive to high morale as plenty of good, hot, well-prepared food. The messes are operated on the Field Ration plan. Master menus are prepared by the Bakers and Cooks School. The C.R.T.C. mess officer requisitions the necessary supplies and makes distribution to the troops. Each troop has its own kitchen and mess hall.

Facilities for recreation at the Center are adequate. The service club has a well equipped cafeteria, reading room, and 5,000-volume library. There are facilities for writing letters and entertaining friends. Dances for the trainees are held in the main room once a week. Music is furnished by the camp trainee orchestra and the girls are brought in from the surrounding communities by their chaperons. Lectures are also held and hobbies encouraged. Each squadron has its own recreation hall where talent shows, boxing bouts, etc., are held. The War Department Theater shows the latest

films. The officers and noncommissioned officers have their own clubs.

Each trainee is required to participate in some form of athletics. Troop, inter-troop and squadron contests are held. The best players are then chosen to represent the camp. The camp football and boxing teams are also creating much interest. Supplementing these major sports is a program of minor sports including soft-ball, basketball, volleyball, ping-pong, horseshoes, etc., depending on the season. The system of inter-platoon and inter-squadron competition is used effectively in all sports.

Well received and very enjoyable are the talent shows. Each squadron has its director under the supervision of the squadron recreation officer. Individual squadrons are responsible for one show per week. This gives those who have talent an opportunity to keep their hand in and also furnish excellent entertainment for the spectators. There is also a dramatic group which presents plays. Also of interest are the classical music programs in which selectees present piano, vocal and violin recitals. A Center of this type furnishes limitless possibilities for recreation and entertainment waiting to be exploited and encouraged for the benefit of the entire command.

That this Replacement Center is carrying out its mission is attested to by testimonials coming from commanders of units receiving cavalry replacements. A letter was recently received from an officer of many years of service stating that the replacements joining his unit from the Cavalry Replacement Training Center were the finest he had ever seen. Many others reflect similar sentiments.

Duty of a replacement center is arduous. Perfection is the goal. Satisfaction with a job well done is the reward.

Characteristics and Organization of the Motorized Division

By

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Types of Divisions

In 1918 we had one type division in our Army. Today we have five: the square and triangular infantry divisions, the cavalry division, the armored division, and the motorized division. The newest of the existing type divisions and the one regarding which, on the whole, the least is known is the motorized division.

However, the motorized division merits close consideration. Six armored divisions are now organized or in process of organization. This is approximately 20% of the total number of divisions. Six motorized divisions have also been authorized, which would indicate a policy of maintaining a ratio of 1 to 1 between the number of armored and motorized divisions. Further increases in the size of the Army will probably bring corresponding increments in the number of armored and of motorized divisions.

Use of the Motorized Division

What, then, is the motorized division? What is its organization, its armament, its mission? Perhaps it would help clarify our thoughts if we consider briefly some aspects of the Battle of France. Of course, the Battle of France was won by the close coordination of many elements working together as a team, including:

(1) Aviation—both reconnaissance and bombers, especially dive bombers.
(2) Pioneer (engineer) elements.
(3) Panzer (armored) divisions.
(4) Motorized infantry divisions.
(5) Foot infantry divisions.

While many details of this campaign are not yet available, the missions given these elements seem to have been to reach far down into enemy territory and

(1) seize vital terrain objectives,
(2) destroy enemy communications, and
(3) divide the hostile forces into small parts, in order to permit of their destruction consecutively and individually.

Public attention has been largely focused on the air forces involved, and on the armored forces, whose operations were highly spectacular. Other elements in the situation have been relatively neglected. Among these is the motorized division. Close examination of the detailed record shows that when up against an organized resistance, the armored divisions were in most cases preceded by infantry which broke through the defensive line, and seized ground suitable for launching of the armored attack. A breakthrough having thus been accomplished, the armored forces pushed through rapidly in exploitation, and operated deep in the hostile rear, disrupting lines of communication, command installations, and the movements of reserves.

While so operating, the armored forces, while highly effective, were also highly vulnerable. The striking force required a strong support echelon to reduce unexpected resistance, to mop up areas that were overrun, and to protect vital rear establishments and supply lines. This necessary support was provided in part by the regiment of infantry and appropriate artillery and other elements in the division itself. However, stronger support forces were required, and these were provided by motorized divisions which followed close behind the armored divisions. In the first ten days of the breakthrough on the Meuse, the German Panzer divisions averaged 20 to 25 miles. But they did not move by average rates. They moved by spurts. Some days showed little progress, some showed advances well over the average. Again in any day's progress, the advance might be held up for hours, the actual advance being largely accomplished in an hour or two. It is thus evident that in a time of rapid advance, the armored forces would be far in advance of the

slower-moving foot infantry divisions. Later, following the collapse of organized resistance, General Guderian, Commander of a German armored corps, advanced south to the Swiss border, a total of 190 miles in 7 days, and was at times 50 to 60 miles in advance of the infantry. In Russia this gap has in some occasions been as much as 100 miles.

How, then, could the armored forces receive necessary support? The answer was—motorized divisions. As the tanks advanced, immediate support was given by the infantry elements in the division. These, however, were promptly relieved by motorized infantry divisions which followed closely in the rear of the armored divisions. These motorized divisions, in turn, kept supply lines open, and provided necessary support until foot infantry pushing on as rapidly as possible, could arrive and relieve them. They, then, mounted their motors, and promptly rejoined the armored forces, repeating this procedure as frequently as necessary.

It is thus seen that the motorized divisions formed an essential connecting link between the armored divisions and the foot infantry divisions. Similar use of motorized divisions has been made in all campaigns of this war, where armored divisions have been used, and is now being made of them on the eastern front.

Other missions than those already mentioned which are deemed appropriate for the motorized divisions include delaying action, the seizure of critical areas, exploitation, and the execution of envelopments and turning movements. Space permits, however, only a suggestion as to the nature of the tactical employment of this division.

All powers which have developed armored divisions have similarly developed motorized divisions, to be used primarily for the close support of the armored forces.

This then, may serve to give some understanding of the nature, importance and operations of the motorized division.

We have briefly considered the importance, and some aspects of the mission of the motorized division. But what of its organization and armament? As was to be expected in a new development, the first organization was experimental, and was patterned largely on existing organizations. Then as experience was gained, modifications were based on such further experience. This process of evolution is still going on, and we cannot yet say that we have established the final form of the motorized division. The development thus far, however, has been sufficient so that we can begin to visualize the pattern. By considering some of the circumstances under which the motorized division will operate, we can visualize the characteristics which it should have. And its organization and armament, of course, should be such as to be adapted to these circumstances of operation, such as to enable it to accomplish its normal mission.

Characteristics of the Motorized Division

What, then, are the circumstances of its employment? And what characteristics should it have? The first that we think of is *mobility*. The very name "motorized division" implies a high degree of mobility. And so it is not surprising to find that that is the first characteristic given consideration in creating this new instrument, the motorized division, both here and abroad. The German motorized division of the spring of 1940 did not differ materially from the standard infantry division, except that all of its trains were motorized, and it was given enough trucks to transport all of its personnel at one time. In moving on the road, therefore, it was able to keep up with the armored division. It was, then, a normal infantry division with increased mobility.

The same was true of our initial development in this country. The War Department, as of 1 November, 1940, published Tables of Organization for the Infantry Division, Triangular (Motorized). This was essentially a normal triangular division. The tables of organization, however, called for its being provided with 201 half-track personnel carriers for each infantry regiment. These personnel carriers hold 13 men each. The infantry regiment—and therefore the division—was thus made completely mobile. It could all be moved at one time by its own organic motors. The War Department Field Service Regulations (FM 100-5), May 22, 1941 states: "*The motorized division* is a triangular infantry division, which has sufficient additional organic motor transportation to permit the *simultaneous* movement of all its elements."

FM 100-5 states one of the characteristic uses of the motorized division as being "to constitute a powerful mobile general reserve for use either offensively or defensively as the situation demands." Note, however, that while the division had great strategic mobility, its tactical mobility after detrucking was no greater than that of the foot division. It fought entirely on foot and when dismounted, its operations and mobility were identical with that of any foot division.

If we think of the motorized division, however, as being primarily a strategic reserve, why have a motorized division at all? Any infantry division can be made into a strategic reserve by temporarily attaching to it sufficient motors to make it mobile. No special organization is required for this occasional use. We must, then, look further for the need and use of the motorized division.

So far what is it that distinguishes the motorized division? It is the personnel carriers. Let us examine these a little more closely. They are half-track vehicles. They presumably have, therefore, greater cross-country mobility than do trucks. Deployment with them can, therefore, be carried to greater degree than with trucks. Moreover they carry light armor intended to be sufficient to protect the occupants from small-arms fire. It is therefore possible to drive them through zones that are subject to such fire. Now troops certainly should not be required to detruck under direct observed small-arms fire. But there are frequently defiladed areas, suitable for detrucking, closer to the enemy than certain zones that are subject to hostile small-arms fire. So the use of the personnel carriers permits a quicker entry into action by the infantry than would otherwise be possible, both because of permitting a further degree of development while entrucked, and by permitting a further advance before detrucking. There are, of course, very many tactical situations where prompt entry into action, in an advanced location, is highly important. Some officers even feel that all our infantry divisions should be thus equipped with personnel carriers for this reason. Only time can tell, however, as to what may be done along this line. But in the existing situation, what are the implications of this battlefield mobility of the motorized division?

This mobility, of course, makes the motorized division peculiarly adapted to the close support of armored forces. The armored division has a striking echelon—the armored

brigade. And it has a support echelon—an infantry regiment and a battalion of field artillery, the latter being in addition to the artillery regiment which is in the armored brigade. Depending on the situation, this support echelon may follow the striking echelon, to protect its flanks and rear, or execute a holding attack, serving as a pivot of maneuver, while the striking echelon makes an envelopment, or it may precede the striking echelon, to clear up an uncertain situation, or to seize ground suitable for the launching of a tank attack. But in many cases, the armored forces may require a stronger support echelon than that provided by the organic means of the armored division. This is where the motorized division will be especially helpful. It is anticipated that in many situations a motorized division will be included with one or two armored divisions, in an armored corps. The use of the motorized division in protecting the flanks of the armored forces will be particularly needed in the case of deep penetrations of the hostile rear, such as in the breakthrough in France to which reference has already been made. Every unit, of course, should be utilized as to take fullest advantage of its inherent characteristics. As it is in the close support of the armored forces that the motorized division will most fully utilize its peculiar characteristics of mobility, it is such close support that constitutes its first and most important use. Its general characteristics, and its organization and armament, then, should be such as best to adapt it to this employment.

What then are the conditions which it must be able to meet and how can these conditions be met? The armored force normally attacks during daylight. The motorized division, then, will frequently move by daylight, whereas the movement of strategic reserves is chiefly at night. And as the time factor will be crucial, it must often, when the tactical situation so requires, move in as close column as circumstances permit. Of course, a close column of trucks is highly vulnerable to air attack and should be avoided wherever possible, as it presents a highly remunerative target for such attack. However, because of the formations and daylight movements that may be tactically necessary, it is essential that the division be strong in antiaircraft weapons.

A column of trucks is also highly vulnerable to a tank attack. Moreover, a motorized division, in following an armored division, is especially liable to tank attack. When an armored force attacks, the normal reaction of the enemy will be to try to block its advance, and to counterattack its flanks, and rear, for it is on its flanks and rear that the armored force is most vulnerable. And the enemy will make its counterattack with as strong a force of tanks as possible. As, therefore, the motorized division is following closely on the heels of the armored division, it may have to bear much of the weight of the hostile reaction. It is, therefore, essential that it be particularly strong in antitank means. In this connection, Training Circular No. 10, November 29, 1940, referring to the original triangular division (motorized) makes the following statement: "The special characteristics of a motorized division make it especially suitable for execution of delaying missions, except against armored units." Hence it is seen that the normal infantry divisional organization needs major modifications if we are to create a suitable organized motorized division.

Since its operations will frequently be widely dispersed, and its frontages extended, and since it will be subject to strong hostile reactions, its operations at a given time, while strategically offensive, will often be tactically defensive, and will normally require strong support by automatic weapons, and the motorized division should be amply provided with these. Moreover, the infantry will require accompanying artillery. They should, therefore, as was recently authorized, be provided with assault artillery. These factors suggest some of the chief changes in armament, as compared with a triangular division, that should be provided.

The movement of the division should, where practicable, be in multiple column, both to expedite its development and entry into combat, and to decrease its vulnerability to air or ground attack. It will, therefore, be often widely dispersed, and subject at times to being engaged in a number of separate and independent combats. It must, accordingly, be capable of a high degree of decentralization. At the same time, it will be essential that the commander, in a highly fluid situation, have constant contact with all units. Signal communication, therefore, becomes of crucial importance. This requires utilization to a large degree of ample radio facilities, of adequate power.

The large amount of transport, and its frequently rough use, requires the availability of substantial motor maintenance facilities.

The motorized division frequently will be operating deep in the hostile rear. Even though it may be following closely behind an armored division, it will need constantly to insure the protection of its flanks. This may at times involve the establishment of a protected corridor. But it will frequently involve continuing extended reconnaissance. The division requires a strong reconnaissance element.

As it will frequently be operating in areas where considerable demolitions have been effected by the enemy, the motorized division should have a strong component of engineer troops, including bridge building elements. It will frequently operate with long supply lines, subject to interruption, and should therefore, be provided with adequate supply facilities, including increased provision for gas and oil.

These are some of the characteristics the motorized division should have to meet the conditions of combat appropriate to its normal major function of close support of armored forces.

Organization of the German Motorized Division

It is not surprising to find that the Germans, having had extended experience with the use of the motorized division, early recognized these conditions, and made extensive modifications in the organization of their motorized division as a result. This year then, we find the 1941 model German motorized division to be organized somewhat as follows:

1 Motorized Reconnaissance Battalion
3 Motorized Infantry Regiments
1 Division Antitank Regiment
1 Division Antiaircraft Battalion
Division Artillery
1 Division Pioneer Battalion
1 Division Signal Battalion
1 Division Medical Battalion
Division Trains.

The German reconnaissance battalion has both light and medium tanks in two armored car companies, and contains a

motorcycle company and a heavy weapons company, with 75-mm howitzers. And it contains antiaircraft weapons and an engineer element.

The German antitank regiment has both 47-mm guns and 75-mm guns, on self-propelled mounts. The antiaircraft battalion has three calibers of antiaircraft machine guns. These are dual purpose AA-AT guns.

The German division artillery is about as in our triangular division—roughly composed of a headquarters, three battalions of 105-mm howitzers and one battalion of 155-mm howitzers. But the engineer (pioneer) battalion has a ponton company. The signal battalion has a radio company as well as a telephone company.

The German division contains a radically new type of infantry regiment. There are only two rifle battalions, but there are two other battalions that are essentially antitank battalions. The accompanying weapons battalion has a light tank company—a tank company in the infantry regiment, it will be noted—and two companies of assault artillery, with 14 to 16 howitzers, 75-mm or 105-mm. And there is a tank destroyer battalion of 2 companies of 47-mm AT guns. All these howitzers and antitank guns are on self-propelled mounts. Here then we have an extremely mobile force of very heavy fire-power—not a "combat team"—not with *attached* weapons, but with weapons organic in the infantry regiment. How our old concept of the infantry regiment as a lot of doughboys sloshing along, with rifles on their shoulders has changed! This infantry regiment has only four rifle companies. And even these are built around their light machine guns.

Here then, we have essentially an antitank division, possessing perhaps more antitank fire power in one division than has been contained in our conventional corps! Here is a hybrid organization, partaking of many of the characteristics of an infantry division, but partaking also of many of those of an armored division, and many of those of a cavalry division, a division of high mobility designed to give and to receive hard blows, and a division destined to be at the crucial point in many a battle to the death. Such is the German motorized division of today.

Some minor changes in the organization just outlined appear in German motorized divisions which have operated recently on the Russian front, but the main features have been little changed.

The Provisional Motorized Division

But what about the United States? We are moving rapidly in the same direction. Censorship does not permit a discussion at present of the steps in our development. However, it is anticipated that at an early date the War Department will publish new Tables of Organization for the Motorized Division. Experience to date indicates that in this country, as in all countries which have developed armored forces, and motorized divisions to support them, the organization of the motorized division will be along the general lines of that of the German motorized division described above. The division that is visualized has the major characteristics which I have pointed out that such a division should possess. It is strong in automatic weapons, and provides for assault artillery to support the infantry. It has increased supply transport and motor and ordnance repair facilities. It has a strong reconnaissance element. It has strengthened engineer and radio facilities. It is, then, a radically new type of division, hand tailored to meet its conditions of combat. It will frequently be intermediate in location on the battlefield between the armored and the foot infantry divisions. It is no accident or mere coincidence that it is intermediate in organization and equipment between these same divisions.

A Few Reflections on the Armored Branch

["Quelque reflexions sur l'arme Blindée," by Captain E. M. G. Schenk, in *Revue Militaire Suisse*, August, 1941. Translated and condensed from the French at the Command and General Staff School, Fort Leavenworth, Kansas.]

This is a review of the various campaigns which have followed one another since September 1939, studying them only from the angle of *tanks and antitank defense*.

Poland: The German theory is revealed in all its fullness with the replacement of accompanying artillery by aviation as an entirely unexpected factor. This results in a remarkable speeding up of the tempo of the operations.

This campaign also furnishes us with the first confirmation of the fact that antitank defense comes ahead of every other consideration, and the more so in case the defender is lacking in arms and means specially designed for antitank combat.

The role played by the terrain and the possible results of its judicious utilization was hardly evident because:

(1) The whole campaign was carried through under good weather conditions and with dry surface, an ideal condition for tanks.

(2) The Polish terrain makes the problem of defense against tanks especially difficult.

(3) The rapid and complete disorganization of the Higher Command, immediately gives operations a broken and disjointed character, and the employment of the terrain as a defensive element is properly their problem and must involve a sufficiently great breadth of front and distribution in depth.

Finland: The Nordic winter is not favorable to the employment of tanks. The snow and cold cause numerous mechanical troubles which, in the present case, cannot manifestly, be anticipated.

The tank is incapable of doing its best without a first-class crew. The machine continues to be only inert matter, possessing value through the instrumentality of the men who operate it.

In this country we have a defense in a well chosen and favorable terrain, with numerous antitank weapons and men of sturdy morale and perfect efficiency. (The final success of the Russians was obtained after an infantry and

artillery battle of the 1917 type and when exhaustion was making itself felt in all fields of the defense.)

Norway: In a deeply cut terrain where the existing routes offer the only possibilities of penetration, the destructions of these routes is a determining factor. And because of these facts, it is absolutely imperative that the operation of these routes be guaranteed and that mined works and their personnel be protected against all efforts which the enemy may make to obtain possession of them intact.

Holland and *Belgium:* We have here the confirmation, in a very different terrain, of the lessons learned in Norway with respect to preparations made for demolitions—which accomplish their purpose, or do not.

We find again the same attack procedures as in Poland, but with a still greater number of tanks which were also probably better protected, proof that the Polish antitank defense, although limited, did nevertheless cause losses.

Linear defense arrangements, even very strong ones, are of no avail against an adversary who seeks an *opening* to break through and attack the rear portions of the positions without worrying about the frontal organization. Their later reduction is the more furthered by the fact that they will be caught from the rear—an unanticipated event in the planning of continuous fronts.

Certain types of obstacles are only relatively effective, especially railroad rail barriers, when badly located and exposed to favorable attack by the tanks.

France: We can distinguish two very different phases, first, the *operations of May, 1940,* identical with those of Belgium and Holland where the "Panzer" divisions win the decision with no great difficulty and all alone over a *linear* defense arrangement, while the French scarcity of antitank weapons is tragically evident.

Then the operations of June, 1940. At this time the French army is already deprived of a large part of its equipment, its best forces have been used up in the North, no defensive preparation has been made in the terrain where the battles are being waged. Nevertheless, under these more than precarious conditions, the antitank defense is much more efficacious. In many sectors, it even forces the attackers to renounce the use of their tanks, being unable to force a passage, and adopt again the classical methods of attack, that of infantry with supporting artillery. But the final results are not modified, for the superiority in forces and equipment is on the German side. Whence came this change during the very crisis and concerning which no one has seemingly taken any thought, up to the present?

As soon as General Weygand takes command, a new theory of defense is conceived, released, disseminated, grasped, and placed in execution, which proves efficacious in spite of the circumstances of its conception. The words "Weygand line" have been used. It appears that, for once, at least, this word "line" was the last one which should have been employed. Over the terrain where he is to receive the shock of the "Panzer" divisions again, the French Commander in Chief has organized his defense with as great depth as the reduced forces and equipment at his disposal permit. He inaugurates the method of **systematic spacing* of his strong points, makes logical use of the terrain, taking advantage of villages and woods, and lastly of the few tanks which he has left, for tank counterattacks. The arrangement proves to have more than makeshift value though its antitank armament is clearly insufficient in spite of the reinforcement furnished by the 75-mm field guns. Nevertheless, the arrangement accomplishes its purpose. The attacks such as Poland, Belgium and Holland saw, where the tank acting all alone gained the decision in a minimum of time, did not succeed, and it is the infantry, with its regular auxiliary, which is forced to take the mission in hand. Of course, since this infantry and its auxiliary are largely motorized, there is no time out for stops, so to speak. The results, therefore, are about the same as in the case of the "parade" of the tank attacks. What happens afterward is another matter.

After the rupture of the last coherent organization, the progress of the German armies in France is no longer anything more than a march of advance where the tanks play the role of a tireless advance guard, combat being reduced to a few secondary incidents. It even frequently happens during the course of these episodes that the tanks are forced to hand matters over to the infantry for the purpose of reducing some village where a few well placed weapons are holding up their advance. The case of the battle of Maiche where three days are required to reduce two skeleton divisions backed up against the Russian frontier, is far from being an isolated event.

Summarizing: In the battle of France, tanks played a very important role as long as the adversary hung on, intellectually, to the methods of 1918. They obtained the following results which would in themselves be amply sufficient for the glory of the tanks:

(1) The immediate breakthrough of the *linear* defense arrangements of the Dutch, Belgians and French.

(2) The establishment of contact with the French and English in a time limit much less than had been anticipated, creating thus a situation highly favorable for further operations.

(3) A breakthrough at the pivotal point of the French forces and a march, which will always be legendary, to the city of Abbeville by way of the Somme valley, preparing the way, thereby, for putting the best of the French forces out of action.

Afterward, and because of the fact that the defense had learned to handle the "parade", the tank became what it had been in 1918, an infantry auxiliary, and this at the moment when the "Panzer" divisions were beginning to feel the keenest need of mechanical overhauling and rest.

Libya: The main lessons to be learned from the operations in this sector are:

(1) That the German theory is not born of some mysterious secret and that it may be used just as successfully by other armies.

(2) That desert wastes may play the role of an antitank terrain and that even if man can endure thirst within certain limits, this is utterly impossible for a motor.

(3) That it is impossible for a tank offensive to pass its objective with impunity, and that just as soon as they are stopped by any cause, the mechanisms are sometimes more troublesome and exposed than useful.

Albania: Winter campaign, mountainous terrain, defender who makes great use of demolitions, all known unfavorable conditions for tanks combined.

*(Translator's note: The translation *systematic spacing*, has been given the word *"quadrillage,"* meaning, literally to *lay off in squares.*)

Balkans: In a difficult terrain, but against an adversary who was unable or who had not wished to learn a lesson from Poland, France and Albania and above all, did not possess an army corresponding to its military policies, the German tanks gave performances which did honor to the energy of their command and the physical resistance of their crews. But they did not appear to have encountered any very solidly organized antitank defense. The difficult terrain appears to have been their main obstacle. Even though losses were negligible, the effects of stress on the equipment, appear to have been considerable.

Russia: It is certainly premature to attempt to draw conclusions from operations which are still in progress. Nevertheless certain facts are already evident:

(1) For the first time there appears to be a practical balance between the two adversaries, both in quantity and quality of equipment. Tank warfare loses its one-sided character in this case, therefore, and as soon as we have accurate facts and figures at our disposal, we can set up the balance sheet with the two columns, *active* and *passive*, filled in.

(2) In spite of the affirmations of newspaper men who are the willing victims of words, the ideas of *front*, and *front* and *rear lines*, are giving way to the idea of *zone of hostilities* whose dimensions are proportional to those of the masses of troops engaged. The defensive tactics sketched by Weygand find their application, but with adequate equipment and quite different success. Tank counterattacks have an efficacy which should bring about certain modifications in antitank defense.

(3) If good organization supported by powerful industries makes it possible to view great losses of equipment without worry, there still remains the problem, which will perhaps be partly solved in the near future, of the relief and replacement of the specialized personnel. The loss of 500 tank drivers is, even in a large army, certainly more serious than that of the 500 machines or of 50,000 riflemen. The great advantage of tank units is that with a great reduction of manpower, they represent enormous shock force and fire power, but this elite body of highly trained men is not to be had by mass production methods or trained in six weeks.

(4) It is freely stated by all that the tank and its motor have done away with distance, but here also there is a ceiling which appears to be situated in the neighborhood of 500 kilometers.

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From this examination, which has necessarily been very brief, a few conclusions may be drawn which are as follows:
Offensive employment:

(1) That the theory developed by the German National Defense has remained essentially the same after two years of war. This tends to obtain the results desired by the employment of the tank as an independent arm. In case of a stall, the immediate change-over is made to the classical infantry battle, these troops, motorized to a very large extent, coming into action with but very little delay thus preventing the enemy from realizing, often, that a second phase has begun, quite distinct from the first.

It is only in the measure that they have assimilated this theory that the English, in Libya, and the Russians have been able to make profitable use of their armored equipment.

(2) A breakthrough is always possible in the case of *linear* defense, even powerfully organized, merely by giving the job to the infantry, not the tanks. But then, as soon as the hole is made, the tanks rush in and make short work of wrecking the rear services of the enemy, the enemy's command and morale, making all retreat and reorganization in new positions impossible.

(3) On the other hand, however, if the defense has not permitted itself to be hypnotized by the assumption of some arbitrary or traditional direction from which the enemy is to be expected, if it is organized into a zone of resistance where there is neither front nor rear, but only systematically spaced strong points looking in all directions. Then the tank lacks its normal objectives which, at the same time, are its most profitable. The losses sustained are no longer proportional to the results obtained, and it even happens that it is impossible for it, unaided, to cross the defense zone where passage is barred to it. It is then obliged to wait until some other arm has made an opening through which it can take up again its first mission.

The Einheit Theory

BY

COLONEL FREDERICK M. BARROWS, *Field Artillery*

"Organization is the servant of tactics and not its master."

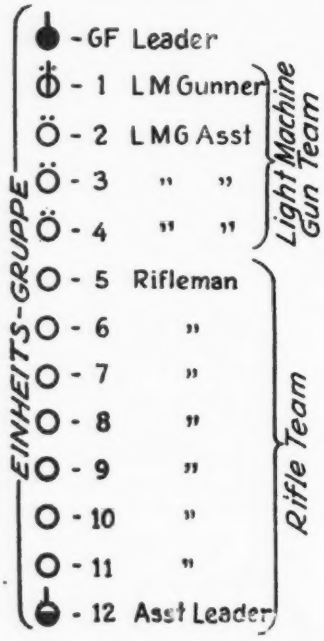
Before going into the Einheit Theory it must be remembered that the German mind is essentially logical and because of that fact the organization of the various units of the German Army have naturally followed a clean-cut line of thinking based on fundamental military principles. In spite of this the German military hierarchy considers its tables of organization as nothing more than a temporary expediency. It has been said by competent authority that probably no two infantry divisions are organized alike but by analyzing and studying very carefully the German organization of the past and present, one may be led to the belief that certain fundamental principles exist upon which all German organization is based and, further, that these principles directly bear on all German tactical doctrine and a study of them brings out the organizational means by which certain features of German tactics are made possible.

To begin with, the word *Einheit* means unit or unity and the Einheit principle is applied throughout the entire German Army and to a great extent the nation. Each battalion, regiment and division is given the proper balance of fighting means and housekeeping means to allow attachment or detachment of a unit without impairing its fighting efficiency or that of its parent unit. The Einheit principle of

organization might be stated as follows: A standard unit group with standard organization, training and equipment is taken as a basic unit which is included in all organizations of the army where its use is applicable. This principle is closely connected with and really a part of the principle of tactical self-sufficiency of combat units; that is, each combat unit of the German Army beginning with the basic infantry group on up to the complete infantry division is so organized and equipped that it may be tactically self-sufficient to accomplish its local combat mission. In other words, each combat unit contains in its organic armament all supporting weapons it habitually requires in order to accomplish its own local combat mission and, furthermore, no weapons are in its organic armament that are not habitually required for its local combat.

To give a brief description of the Einheit principle one might say that it is made up of a system of identical units, these units being classified according to the branch to which they are to be attached and the training, organization and equipment of all units under any one particular classification are exactly the same. Often they are identical throughout the service except that a part of the basic training has been in the branch to which the unit originally belonged. Training becomes specialized after the basic stage and the personnel become specialists in their particular work. It can be seen that this is a very advantageous system, for example, if an engineer unit is short an engineer telephone unit it can obtain one from the cavalry or artillery, etc., knowing that the size of the unit and its equipment will be the same as their own. Also, after a commander has been given certain organizations as his task force he may shift various units without hurting his organization. The Einheit Theory is really nothing more than interchangeability of parts. The various parts can be shuffled up and dealt out to various organizations to meet any specific need or task. In this connection it is understood that the German War Office controls the German automobile industry in such a manner as to require all trucks, busses and most passenger cars to be built according to army specifications and to follow the Einheit principle of interchangeability of parts so that these units, in time of war, can be mobilized on twenty-four hours' notice. It is also said that the city busses are uniform in size and construction and are believed to be built to facilitate troop movement in case of war and each bus will accommodate a platoon of infantry with its baggage. This Einheit principle also goes into the administrative features and each tactical unit is responsible for its administration and is so organized as to be independent of the next higher unit as to personnel and transportation.

To show how thorough the Germans are in their organization, it is believed that all enlisted men of the German Army, the Air Corps and the Navy, no matter to what arm or service they belong, are trained to fight with the rifle as part of a group. The basis of German infantry organization is the smallest infantry combat unit, the so-called Einheitsgruppe (unity group). This group is composed of two basic parts, the rifle team and the light machine-gun team. This Einheit group is the basic fighting unit. It might be said that the tactics of this group are those of the last 400 yards. From battle experience and the effectiveness of infiltration in World War I, the Germans originated this battle group. In it, firepower and shock power are united. Deployed in battle it is the largest unit which in all situations is controlled by voice or signal of its leader. Its size, composition and use have had a marked influence on the training and employment of the infantry division. The Germans no longer have a squad organization. This has completely changed the training in close order drill and it has changed the divisional march formations from columns of fours to columns of threes. Below is the Einheit group, it being one of the three groups of a rifle platoon:



Each individual is given training as a part of the rifle team, and also as a member of the light machine-gun team. This training includes field problems with live ammunition. The group is a unit for training and battle. Its light machine-gun team and its rifle team are used by the group leader to mutually assist one another forward. By the combined use of these two teams the enemy resistance is overcome.

We find this same principle of organization in all field and combat trains, for example, the "Tross" or train of each company, troop or battery is identically organized, there being only minor differences necessary for the means of transportation involved. Each "Tross" or train contains three Einheit groups, the combat train, the baggage train, and the ration train. In a company, however, each of these trains is but one vehicle. In the system of supply the battalion is given sufficient means within itself to procure its own supplies from the division supply agencies. In a like manner all battalion, regimental and division ammunition and service trains are based on the standard light column, a complete operating unit of fifteen-, thirty- or sixty-ton capacity while all supplies are made up for issue and transportation in multiples of thirty-ton lots. Railroad trains contain 15 cars with a total capacity of 450 tons [15 (cars) X 30 (tons)].

It can be seen that with this Einheit principle, supply and replacement of equipment are much simplified and there can also be a standardization of the training and tactical employment of Einheit units of all branches of the service. It gives great flexibility to organization and makes easy the adaptation of progressive changes in organization and armament.

To illustrate how far the Germans have gone in this Einheit principle and the interchangeability of parts let us consider the 10-cm gun with the 15-cm howitzer. For a long time these two weapons have confused foreign observers. Even a short distance away, they appear very similar. The carriages of both are identical and inter-

changeable; both weapons can be used as cannon and both as howitzers. Alone the barrels are different, the 10-cm cannon being of less caliber and a meter longer. The weights of both weapons in firing position are declared to be practically the same. A single type of tractor can be used for hauling. These two field pieces are often seen in the same battalion.

It is also said of the artillery that the Einheit principle is carried not only in the construction of the weapons but also in the training of the crews within the batteries.

In this Einheit principle, while the units may vary in size according to the requirements of the forces to which they are attached, they are identical in that their components are always proportionate.

Another slant on this Einheit principle is that when battle losses weaken the Einheit groups they must be rebuilt to full strength. For example in an infantry platoon, the Germans feel it is much better to operate with two full strength Einheitsgruppen than with three part-strength groups.

Not only in the army, navy and air corps is this standardization and interchangeability of parts found but also in civilian machine shops and governmental factories. The specifications for all of these standard parts have been reduced to printed form with the designation: "DIN" (*Das Ist Norm*, That is standard) for the guidance of manufacturers and users of these forms.

Closely related to the Einheit principle, a first cousin perhaps, is the principle of tactical self-sufficiency of combat units stated briefly at the beginning of this article. In it each combat unit ranging from the Einheitsgruppe of 13 men (light machine-gun team and rifle team) to the complete infantry division, is so organized and equipped that it is self-sufficient, tactically, for the accomplishment of any local combat mission assigned to it. It naturally follows that, according to this principle, each combat unit shall contain, organically, all supporting weapons it habitually needs for the accomplishment of its own local combat mission, i.e., stating it differently, each unit contains as its organic equipment and armament no weapon not habitually needed for its own local combat.

In this connection, the infantry regiment is very interesting, being a pocket edition of the German triangular division. It has three battalions, each battalion containing three rifle companies and one machine-gun company. Each rifle company has in it three platoons and each platoon three Einheitsgruppen. This regiment has also a pioneer platoon, some cavalry for its own reconnaissance, security and liaison, its own antitank unit, its own artillery, mortars and infantry cannon and its own communications service. This infantry regiment is able to sustain itself in any ordinary action. Should it meet unusual conditions, the next higher command must provide it with the necessary reinforcements. The infantry platoon commanders have rifles, machine guns, antitank rifles, hand grenades, small trench mortars, and, going on up to include the division commander, each commander is taught to handle other arms and how to use them so that they may become an efficient fighting unit. So one might say, if this be true, there is no such thing as an inexperienced division commander.

Another principle closely related to the Einheit principle is the principle of administrative self-sufficiency of combat units. Briefly, this may be stated as follows. Each tactical unit is responsible that its administration and supply are so organized, as to personnel and transportation, that it is independent of the next higher unit. The administration and supply units of the German Army are the army, the division and the battalion and all other tactical units are attached to one of these three for administration and supply. This principle of organization, when considered in connection with the Einheit composition of the division trains into light colunms whose numbers are proportionate to the number of battalions in the division to be served, is largely responsible for the extensive flexibility of German tactical organization. It also permits the German standard division to be freely altered to suit the tactical need at the time.

The principle of administrative self-sufficiency of combat units leads us on to a closely related principle, that of the principle of the march combat group and it is this principle of self-sufficiency of the battalion that lends itself to almost any tactical grouping. So we find each division or similar unit so organized as to be readily broken up into two or more basic combat groups.

The Einheit principle, the principle of tactical self-sufficiency of combat units, the principle of administrative self-sufficiency of combat units, the principle of the march combat group all taken together give the German Army such a flexible organization that a division can quickly be changed from a square to a triangular and vice versa with little or no confusion. If its use is for fire and movement, the triangular formation is used. If for shock action the square formation is used. And further the task force so much used by the Germans in varied forms is, due to the principle of the Einheit principle of organization, very easily organized into any form and to meet any situation. Roughly speaking, a task force may range in size from a reinforced platoon to a group of armies depending on the task involved.

This Einheit theory really does not start at the bottom, as one might think from what has been said, but rather from the top. Nor is it new. This Einheit theory started with Frederick the Great according to Colonel Scherff, in discussing an address given by Doctor Reinhard Höhn in an article appearing in the September, 1941, issue of the *Militärwissenschaftlichte Rundshau* entitled *The "EINHEIT" of Statesman and Commander in Chief*. He says that Frederick the Great believed in the Einheit principle insofar as he was concerned in that he and only he should be both King and General. Ludendorff was the next one who tried it, but he having been so much a soldier for so long was unable to carry out the idea and it was not till the advent of Herr Hitler that the Einheit theory of leadership came into its own once more and with it the Einheit principle down to and including the Einheit group in its many forms and the interchangeability of parts down to and including the smallest bolts and nuts.

Finally may it be stated and let us ponder over this statement someone quoted with reference to the German tactical doctrine:

"Organization is the servant of tactics and not its master."

Advice to New Officers

[From an article, "Consejos a los nuevos oficiales," by Captain Pablo Ray Villaverde in *Ejercito*, August 1941. Translated from the Spanish at the Command and General Staff School, Fort Leavenworth, Kansas.]

Because of the unusual amount of interest taken in the lead article of the October issue, entitled "The Company Commander," another article of somewhat similar nature but written from an entirely different slant and by an officer of a different army, is offered in this issue herewith.— THE EDITOR.

These counsels are meant especially for you, young cadet officer, who have successfully finished your studies and are now about to become a full fledged officer. They contain nothing that you do not already know but they do contain advice which it would be well to keep in mind in order that you may be as good an officer in time of peace as you have been in time of war. This is also meant for you cadets of other grades, in fact it is meant for all who are in the Service for its application is not narrow.

I repeat, that nothing of what I am about to say is new. As will be seen, all the references which I shall make are to works which are already in use. Do not be surprised, either, at my quoting passages from "The Duties of Corporals and Sergeants" since many of their duties are common to all the categories of officers as is indicated in a limited way in one of them, article 43, which says: "Every commander of a guard unit whether he be a corporal, a sergeant or a commissioned officer . . ."

As a matter of fact the corporal does not have a position which is easy to fill. It is important for the reason that it is the first step in the climb upwards and difficult for the reason that one requires the proper understanding of psychology and gifts of leadership to be able to handle it since the corporal lives in close contact with his men, a relationship which gives rise to confidence, but which, if the corporal permits it will also cause a loss of respect. The corporal must make himself liked and respected, and it is not altogether easy to accomplish both these things when one is living with his men. And, I add, if this is one of the duties of a corporal, it is equally so the duty of all commanders.

I assume the liberty of addressing these counsels to you, grouping them in three separate groups, since I am older than you in the noble profession of arms and I justify myself by the adage that the devil owes his wisdom more to age than to his being the devil.

Moral Decalogue

1. Do not be afraid of going too far in the matter of duty. If any thing, do more than your duty. For example speaks louder than words, and this practice will be of great significance to your prestige and moral ascendency over your subordinates.

2. Spend a great deal of time with your unit, and little time in the recreation hall especially if your reason for being there is to listen to the radio or play games or, worse still, if it is for the purpose of indulging in the pleasant but harmful and criminal pastime of finding fault.

3. Be kind and sympathetic of the men under you, especially to the men in the ranks. Bear in mind that the raw material of which our Spanish soldiers is made is of excellent quality and when it is well treated and cared for it becomes so attached to its commanders that profiting by this characteristic, you will be able to lead it wherever necessary. And however little observant you may have been in the war you will have appreciated this characteristic.

4. Look to it that no one under you is mistreated. The inferior must always be conscious of the guardianship and protection of his superiors.

5. Never under any circumstances overlook wrong conduct. Correct it immediately, for if you do not, the chance or accidental fault will become a habit. When we say correct we do not mean punish, simply not tolerate the wrong conduct, showing the man where he made a mistake, if he did the thing through ignorance, reprimanding him if he did it through indifference. If it is necessary, because of viciousness or repetition of the act to punish the man, then punish him.

6. Do not be motivated by anger in punishing the man. Try above all to be just by weighing carefully the seriousness of the misconduct, the former conduct of the guilty man, his intentions and other factors entering into the matter. Be willing to give the man the benefit of any doubt. The unit in which the greatest percentage of arrests is made is not the best disciplined. Discipline is based on the prestige of the superior, the moral education of the inferior, just treatment and exemplary conduct in all grades of the command, arrests and punishments being the means which the law places in the hands of superiors for use in extreme and grave cases and with those individuals who cannot be controlled by persuasion, counsel and example. Whatever the punishment is, it should be commensurate with the crime as viewed from all its angles, and once imposed should be carried out with no hesitation. Make more use of reward than punishment, as this stimulates to good conduct.

Alonso de Ercillá y Zúñiga, in Canto XXXVII of his epic poem, La Araucana, says: " . . . it is clemency to punish in cases where the offense is great. An offense everlooked will only lead to still greater offenses. It is cruel both to pardon everything, and nothing. Where severity is fitting, it is not clement to overlook a fault and he who punishes prevents wrong doing and avoids the need for cruel treatment in the future. He who does not prevent wrong doing, consents to it and may be considered as accessory and any one who pardons an offense against a nation offends that nation."

7. Never excuse yourself for an offense committed against an inferior. It is neither befitting your rank nor a manly thing to do aside from the fact that it is expressly contrary to regulations. Any efforts directed along this line, will only bring your mistake into greater relief and detract from your authority in dealing with offenses committed by your inferiors as well as undermine your character.

8. Watch out for the health of your troops and their efficiency in the discharge of their high mission will be increased. Do not permit any man of your unit to go on duty

while sick even though he may desire to do so as a result of the spirit which you may have developed within him. Advise and instruct him as often as the opportunity presents itself with regard to the measures to be adopted for the preservation of his health particularly as regards the dangers of venereal diseases and excessive indulgence in alcoholic beverages. You will in this way have contributed to the welfare not only of the race but also of the nation.

9. Show respect and deference toward your superiors. Listen to their advise and follow it. Let their conduct and example serve you as a pattern. If by chance the conduct or example of some of them is not worthy of praise (we are all human, and consequently, imperfect), overlook it but do not complain nor criticize and, above all, make the effort to cover up the fact in order that the men may not become aware of it for the bad example may work more harm on them owing to their inferior mentality and education than on you. Be prodigal with your respect and deference in the case of your immediate superior.

10. Let your conduct, whether on duty or off, whether wearing the uniform or not, conform at all times to the standards of honor, the precious legacy of our minds, and to those standards proper to the dignity of the uniform which you wear, the position which you hold and unit which you represent. If some independent minded person says to you: "I do my work well when on duty and in my private life do what I want to and what I do is nobody's business but my own," do not listen to his counsel, for he is completely in the wrong. "It is not enough that the wife of Caesar be honorable—she must appear so."

TECHNICAL DECALOGUE

1. Devote yourself to the study of all military-political problems to gain an ever increasing general and professional education. Bear in mind the fact that the studies gone over in the Academy are not sufficiently complete for officers of all ranks much less for warranting a cessation of study and the belief that no more of it will be necessary. For the methods of war, in spite of their immutable principles, which fact is denied by no one, are subject to continuous change. You may indulge in recreations and pleasures conformable to your age and condition, but the day is twenty-four hours long and you can devote a daily minimum of at least two or three to study and the broadening of your technical knowledge. You will be the greatest gainer from this study. Keep in mind the fact that life is short, and that lost time can never be recovered.

2. Add continually to your knowledge of topography in order to familiarize yourself with the use of maps. Without this study, you will go over the terrain as if with your eyes closed, surprised at every accident of the terrain and uncertain, not knowing positively whether or not you have taken up your location where you were ordered to. In practice maneuvers you can correct a mistake—if you are able to endure the disgrace of having made one. This will not be so easy for you in time of war and, as you know, mistakes and hesitation are very costly at this time.

3. Devote a part of your working hours also to psychological and moral studies since these will be very necessary for your understanding of one of the greatest factors you will have to deal with during your career: your men. Note the fact, in your study of history, that all victorious commanders were, in fact, leaders of multitudes and psychologists who knew how to kindle the spark of enthusiasm and glory in the breasts of their men and draw them along after them to victory and heroism.

4. Make an intense study of geography and history for the study of these subjects is both necessary and fitting to the officer, the necessity becoming increasingly greater as he rises in rank. The first of these two subjects will teach you the geographical and geological characteristics of the various theaters of operations and their favorable or unfavorable features to be considered in the planning of the battle. The second will teach you the causes for the victories or defeats of the great chiefs for do not forget that we frequently say, and hear it said, that history repeats itself.

5. Engage in sports, particularly horseback riding. Make excursions either on foot or horseback into the country. This will increase your physical vigor and that of your mind along with it and you will come to be familiar with the characteristics of the mountains and plains as you overcome this or that difficulty. These excursions will also assist in the broadening of your knowledge of topography, for books cannot teach every thing. In addition to this, your place of operations will be here, in the mountains or plains, and you should familiarize yourself with them in order that they may not be able to surprise you with some unknown characteristics.

6. Do not be satisfied solely with the mastery of your own branch of the service, no matter how comprehensive it may be. Note the resemblance which war has with a game of chess in which each piece, regardless of its value, has a mission to fulfill and not even a pawn can be disregarded if you wish to win the game. The same is true, as I have already said, in war. This follows from the coordinated action of heterogeneous but harmonious whole in which each arm plays the part assigned to it and none can be disregarded. And in order that the commanding officers of the various branches may know what help to expect and what he can give to these various component parts, his understanding must cover all of them.

Besides, if you rise to the rank of General, to which rank you should aspire, you will be the one to coordinate the efforts of these various dissimilar parts in conformity with their various characteristics, and if these characteristics are not understood by you, the results of your efforts will not give you much to be proud of. The fact should be borne in mind that improvisation is never permissible in the head work of an army and the technical knowledge of the various branches is acquired only after many long hours of study. And, even before reaching the highest rank, one may see himself in command of a column made up of units from the various branches of the service.

7. Have an honest concern for the moral education and technical training of your troops. This is your main mission in time of peace. The education and training of your men in order that they may become soldiers is a difficult mission and one requiring firmness and care if your labor is to be fruitful and your efforts are to be crowned with success. And in this education and training you will need to give special attention to those subjects dealing with morale and those which have a direct and intimate bearing on combat.

8. In practical combat instruction, find some method for applying all that has been taught in a theoretical way, giving preference to the solution of concrete cases, making correc-

tions and explaining the reason for everything in order that the man may be persuaded of the fact that everything that is taught to him possesses a real value and that the success or failure of the operations of war will depend on the use he makes of what he learns and that if well trained and educated his chances of escaping unharmed are much greater.

9. Seek to avoid monotony and unnecessary tiring of the soldier in exercises in close order and use of weapons—in fact in training in general. Training does not consist, as many believe, in commanding the men to go through a great number of maneuvers, but just the opposite—in commanding them to go through with a small number of maneuvers—but well executed. Nothing is gained but physical fatigue by taking a platoon and working them out till they are dizzy with left and right turns. Make corrections individually in the matter of evolutions so that none of the men will get off to a false start and have trouble correcting it later and do not command your men to go through with complete evolutions until they have mastered the separate parts.

10. Look after the care of the equipment, ammunition and other war material over which you have charge. These should always be ready for service or action if necessary. This possesses the additional advantage of improving the morale of the troop, for the soldier who goes into battle confident that his weapons will not fail him possesses a definite advantage over the man who is not any too confident in his weapons.

PRACTICAL DECALOGUE

1. Do not neglect any duty, even though you feel certain it will not become known. The things that you may be sure of is that your inferiors will always catch up with you with the consequent loss of prestige. Your constant effort should be, rather, that these inferiors will never find you neglecting your duty. The idea which your superior has of you is important, but that which your inferior has of you is much more important.

2. Do not change the regular order of your activities unless it is for some very important reason for if you do, you will form the habit of acting at your convenience which is contrary to discipline and the military spirit. You are well aware that this career is one of constant sacrifice and if you do not accustom to the small sacrifices of time of peace you will hardly be able to endure the great sacrifices of time of war. If you yourself are not seeking an alteration of duties but a comrade of yours, grant him the favor if possible after having obtained permission from the proper authorities, without any questions, for the rules of comradeship demand it.

3. Do not wear clothing which is not regulation in style, color, or any other way. The tendency to introduce or follow styles in the way of uniforms reveals utter lack of discipline and is regarded as proof of bad taste to say nothing of a worse fault, which is that of not always giving the impression of virility which the soldier should give at all times. It is not enough, however that one wear regulation clothing. One should also wear them in a regulation manner, with the arms in the sleeves, all the buttons buttoned, the head gear on straight, etc. Do not tolerate this thing with your inferiors, either, nor locks of hair hanging over the eyes or ears, so becoming to certain persons, but which, as I said before, do not lead a very virile aspect to a man.

4. In administrative matters and in the matter of feeding the men, be particularly careful. I know that I do not need to tell you this, but I mention it in order to tell you that this alone is not enough. In the latter case, you must be a slave of the kitchen for the purpose of seeing to it that all of the mess fund goes into the pot and that there is no mismanagement. And you must not stop even here, for there yet remains the task of calculating the costs of the meals so that they will be as abundant and nutritive as possible. The soldier is especially appreciative of time spent in this work by his superiors.

5. During the course of your week's activities and whenever possible even though this may not be one of your duties, visit the sick men of your outfit who are in the hospital, and take an interest in their condition, seeing to it that they are well taken care of and finding out if there is anything which they desire. Be prodigal in your words of sympathy and hope for a quick recovery. Find out if his people know of his condition and in case he is unable to write and it is his wish, write to them for him. Under these circumstances, this soldier will be loyal to you to the end.

6. If on guard duty, fulfill all your obligations as a member of the guard, and see to it that all your men do the same. When night comes, watch and do not sleep even though you may be tempted by some companion as well as by your own fatigue. You are young, and it is easy for you to get along without one night's sleep. (You have spent many of them without sleep on the front!)

7. When on guard duty, follow the orders given you. This will appear redundant to you. But when some time has passed by since you graduated from the Academy, you will see that it is not even though it does appear so to you now. You will have to correct everything which is wrong whether you are on duty or not, for the officer is on permanent duty, and when he is on guard duty he is obliged to watch with more care than ordinary and remain on duty the entire time that has been designated for him, and if no definite time has been designated, at least the whole time that soldiers are there.

8. During the week you are on guard duty, try very hard to do your duty properly, beginning with the relief of the troops already on duty so that you can learn in detail all that has taken place during the previous week and the orders and provisions which have been given and made for the carrying out of these orders. If you go about your duties in this way, it will be easier for you to carry out your mission and continue the assignment of the officer in charge of this service conformably with the orders given by the captain of the company. You will be best able, in this way, to cooperate in carrying out the work of the command and should assist them in all their work and on all occasions in a way to inspire their confidence in you.

Never let the sound of a bugle find you away from your post for you know already, that punctuality is one of the greatest of military virtues and lack of it makes an officer useless for military service. In addition to this, it is necessary in order that you may require this same punctuality of your military inferiors with the proper amount of moral force.

9. Whenever you are out in front of a troop or whenever you single out any individual soldier or one presents himself to you, observe carefully their appearance and their

state of cleanliness. For I do not need to emphasize to you as you already know it, how important these factors of appearance and cleanliness are and the ideas which these matters will give rise to regarding the officer who has command of them. And you know equally well the importance of cleanliness and hygiene with the individual, an importance which is even greater, because of the dangers which the lack of these things brings about, among men who are required to live together.

10. In assigning your subordinates to duty, be governed strictly by turn in conformity with the practice followed in the interior service of army corps, and tolerate no changes about except in the case of individuals who have very strong reasons for asking for it. Do not under any conditions permit soldiers to pay others to take their turn on duty for it is prejudicial to the service, immoral, and its tolerance works a grave injustice.

"Old Army Recruiting Posters"

An article, "Old Army Recruiting Posters," by J. Paine in the July 1941 issue of *The Journal of the United Service Institution of India,* describes vividly some of the posters employed by the English during the past two centuries.

An extract taken from a recruiting poster launched by the 16th Light Dragoons at the time of the regiment's formation in 1759 ran as follows: "You will be mounted on the finest horses in the world, with superb clothing and the richest accoutrements. Your pay and privileges are equal to two guineas a week, you are everywhere respected, your society is courted, you are admired by the fair which, together with the chance of getting switched by a buxom widow or of brushing with a rich heiress, renders the situation truly enviable and desirable. Young men out of employment or uncomfortable—'There is a tide in the affairs of men which taken at the flood leads on to fortune,' nick it instantly and enlist."

Concerning the Royal Artillery and its posters, Mr. Paine writes that about one hundred years ago its recruiting sergeant was at a tavern in Taunton. A poster in use then stipulated that apprentices would not be accepted and applicants must not be married. Other information on the poster read as follows: "They must measure 5 feet 8 inches in height and be between eighteen and twenty-two years of age. Growing lads not more than seventeen may be admitted. They will receive the same liberal bounty of £5-15-6. On their arrival at Head Quarters they will be taught the art of riding, driving, fencing, gunnery and the mechanics. The making and use of gunpowder, sky rockets, and other fireworks, and by the power of a lever to move a 42-pounder battering gun with the same facility as a penny whistle. The cannon used in the field are called *Flying Artillery* from the astonishing rapidity of their movements. The Gunners (for so Artillerymen are styled) wear a *splendid uniform* and are well mounted on taking the field."

World War II

The War With Japan

The war between the United States and Japan had its roots in the "Manchurian adventure" of September 1931 when the Japanese Army began its aggression on the Asiatic mainland, marking the beginning of a decade of aggression by the Japanese.

Prior to that time, the United States carried on commercial transactions in the Far East with few restrictions, but not so later. Western economic interests in China were injured and the injuries were increased particularly in 1937 when war between Japan and Chiang Kai-Shek's China began.

Before 1937, the United States and Japan had adhered to a trade treaty signed in 1911. Some of the main points of the treaty were: (1) the citizens of each country could purchase goods in the other under the same conditions and on the same terms as any other persons; (2) freedom of commerce and navigation for each country in the other was agreed to; (3) no import duties were to be charged citizens of either country in excess of the amount charged any other foreigners; (4) in general, the normal friendly and customary trade relations were to be extended by each country to the other.

The rift between the United States and Japan widened in July 1939 when the former announced that the existing trade treaty of 1911 between the two nations would be allowed to lapse. The United States then began to give more aid to the embattled Chinese. Nevertheless, Japan continued on her course and her statesmen emphasized the "greater East Asia" they were seeking, an East Asia dominated politically and exploited economically by Japan.

What might have been only a localized dispute in the Pacific was widened to world dimensions a year ago last September when Japan signed in Berlin the Axis Partite Pact that made the "empire of the Rising Sun" a partner in the Hitler scheme for carving up the earth for the benefit of "have not" nations. Since Japan indicated her approval of the Hitler procedure in world affairs, it was assumed by the A B C D (America, Britain, China and Dutch Indies) nations that she might participate in aggression to attempt to gain control of all East Asia.

No doubt the Axis has encouraged Japanese designs on the Netherlands Indies and southeast Asia, both rich in raw materials. Indo-China was nearly defenseless after the collapse of France, and the Japanese moved into that country, winning French agreement to control the colony. To retaliate for this objectionable Japanese act, together with threats of doing something worse, the A B C D powers established an economic blockade, which threatens to be also a military blockade around Japan. This blow was felt in Nippon because it shut off her supplies of seriously needed oil, tin, rubber, iron and copper.

The military aspect of the trouble between the A B C D powers and Japan has become more and more important. The British strengthened their defenses at Singapore; the Dutch in their Indies were, like the British, preparing against possible attack; and the United States were making stronger their position in the Philippines and other points in the Pacific.

Ostensibly, in view of these circumstances, Saburo Kurusu was sent as a special envoy to the United States to assist Ambassador Nomura in diplomatic efforts presumably to obtain satisfactory agreements between the two nations. Conferences between the Japanese representatives, Secretary Hull, and President Roosevelt continued for more than two weeks. The only apparently significant result was that the policies of the two nations were clarified. Japan's position embodied these points: (1) American economic blockade and restrictions be lifted; (2) Japan has a special position in East Asia and must be expected to expand farther to the south, possibly into Thailand, possibly the Netherlands Indies; (3) Japanese domination in China must be accepted as fact.

On the other hand, the American attitude was essentially as follows: (1) Japan must expand no further south; (2) she must cease active cooperation with Germany; (3) she must not seek to acquire and maintain domination of China.

These positions were so definitely opposite that some concessions would have to be made before any agreement at all satisfactory to both nations could be determined. However, the State Department at Washington signified a willingness to continue the conferences with a view of arriving at some peaceful settlement, but not entirely without evidence of misgivings. For example, news of Japanese troop movements into Indo-China reached Washington, and President Roosevelt asked the Japanese representatives to explain these troop movements. An explanation from Tokyo which later proved to be a deception was handed to the President. In effect, the Japanese officials said additional troops were needed in Indo-China for protection against the Chinese.

Then came the treacherous surprise attack by Japanese aerial bombers on Pearl Harbor and Honolulu resulting in considerable loss of life and casualties, including army and navy personnel, and U. S. citizens, and damage to U. S. military and naval equipment. It must be borne in mind that this attack on Pearl Harbor occurred about an hour before the Japanese officials' conference with the President. It took at least two weeks to get the various vessels in place for the attack on Pearl Harbor. Such treachery on the part of civilized nations has hitherto

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MILES
U. S. S. R.
MANCHOUKUO
MONGOLIA
JAPAN
TOKYO
YOKOHAMA
KOREA
KWANTUNG
CARAVAN & MOTOR ROUTE
CHINA
PAOKI
SHANGHAI
BONIN ISLANDS
MARIANAS (JAP.)
CHUNGKING
RIVER
YANGTZE
ROAD
FORMOSA
GUAM (U.S.)
KUNMING (YUNNAN)
CANTON
HONGKONG
BURMA (BR.)
BURMA
CAROLINE ISLANDS (JAP.)
HAINAN
FRENCH INDO CHINA
MANILA
PHILIPPINE ISLANDS (U. S.)
JAPANESE MANDATE
THAILAND (SIAM)
RANGOON
CAMRANH BAY
SPRATLEY ISLANDS
BORNEO (BR)
SARAWAK
NEW GUINEA
MALAY STATES (BR.)
SINGAPORE
BORNEO
CELEBES
SUMATRA
NETHERLANDS EAST INDIES
BATAVIA
JAVA
AUSTRALIA

been unknown. Following this infamous event, President Roosevelt delivered to Congress what will probably prove to be one of the most famous war messages of history. It follows:

"To the Congress of the United States: Yesterday, December 7, 1941—a date which will live in infamy—the United States of America was suddenly and deliberately attacked by naval and air forces of the empire of Japan.

"The United States was at peace with that nation and, at the solicitation of Japan, was still in conversation with its government and its emperor looking toward the maintenance of peace in the Pacific.

"Indeed, one hour after Japanese air squadrons had commenced bombing in Oahu, the Japanese ambassador to the United States and his colleague delivered to the secretary of state a formal reply to a recent American message. While this reply stated that it seemed useless to continue the existing diplomatic negotiations, it contained no threat or hint of war or armed attack.

"It will be recorded that the distance of Hawaii from Japan makes it obvious that the attack was deliberately planned many days or even weeks ago. During the intervening time, the Japanese government has deliberately sought to deceive the United States by false statements and expressions of hope for continued peace.

"The attack yesterday on the Hawaiian Islands has caused severe damage to American naval and military forces. Very many American lives have been lost. In addition, American ships have been reported torpedoed on the high seas between San Francisco and Honolulu.

"Yesterday the Japanese government also launched an attack against Malaya.

"Last night Japanese forces attacked Hong Kong.

"Last night Japanese forces attacked Guam.

"Last night Japanese forces attacked the Philippine Islands.

"Last night the Japanese attacked Wake Island.

"Japan has, therefore, undertaken a surprise offensive extending throughout the Pacific area. The facts of yesterday speak for themselves. The people of the United States have already formed their opinions, and well understand the implications to the very life and safety of our nation.

"As commander in chief of the army and navy, I have directed that all measures be taken for our defense.

"Always will we remember the character of the onslaught against us.

"No matter how long it may take us to overcome this premediated invasion, the American people in their righteous might will win through to absolute victory.

"I believe I interpret the will of the Congress and of the people when I assert that we will not only defend ourselves to the uttermost but will make very certain that this form of treachery shall never endanger us again.

"Hostilities exist. There is no blinking at the fact that our people, our territory and our interests are in grave danger.

"With confidence in our armed forces—with the unbounding determination of our people—we will gain the inevitable triumph—so help us God.

"I ask that the Congress declare that since the unprovoked and dastardly attack by Japan on Sunday, December 7, a state of war has existed between the United States and the Japanese Empire."

The Congress quickly passed the war resolution and subsequent to this important event the news reports in general covering the military activities have been too fragmentary and uncertain for us to give anything more than a vague and uncertain account. Accordingly, it is fitting that as we go to press, we end our discussion of the war with Japan with the President's declaration which will be a good starting point for the narration to begin in the next issue of the Military Review.

Russo-German War

In order to orient ourselves and bring the war up to the beginning of this quarter, i.e. approximately to the middle of September when we last went to press, let us review briefly what happened up to that time.

Going back a little, before the War began, Stalin evidently fearing an attack by Hitler took several steps to secure for his country, a buffer strip comprising from north to south: a strip of Finland; Estonia; Latvia; Lithuania; eastern Poland; Bessarabia. This buffer strip was roughly about two hundred miles wide and acted as a sponge which absorbed thousands of German lives and much material, kept most of the fighting for the first two months off of Russian territory and gave the Soviet Union time to mobilize the remainder of her army and better prepare her defenses.

Stalin acquired this territory, except the strip of Finland, with practically no fighting, evidently much against Hitler's wishes, who, not wishing a war on two fronts, unwillingly acquiesced. History may show that this buffer strip saved Russia.

The War began 22 June with what was a rapid advance of from two hundred to four hundred miles in four weeks, i.e. practically all of this advance being in the buffer strip. It could be seen after the first month that this attack was taking shape in the form of three mammoth offensives: on Leningrad, on Moscow and in the Ukraine. After about three weeks, which the Germans spent in reorganization, consolidation and movement of bases nearer to the front and rest for the troops, the attack was resumed with the Stalin Line overrun and the three offensives spoken of above well under way. During this lull, the Soviet Army completed its mobilization and reorganization.

In the last issue of the Military Review was a narrative of the war, with a series of maps showing the week-by-week cancerous growth of the Nazi invasion. The map herewith shows the line as it then appeared on the map representing the front on 13 September when we went to press.

As can be seen Leningrad was almost surrounded but still holding out. In the center on the Moscow front the Germans had reached a point about 170 miles from the Soviet capitol. In the south, while they had not yet succeeded in taking Kiev, the Germans had conquered all of the Ukraine south of that city and west of the Dnieper, except for Odessa which was still in Russian hands, though like Kiev, under terrific bombardment.

Briefly, what has happened from the middle of September until now, the middle of December, as we go to press, is that the Axis with Leningrad as the hinge have slowly but surely pushed on, advancing the front eastward against determined resistance until it now has reached the line: Leningrad-Moscow-Roskov (see map) with all three still in Russian hands, the Soviets not only still stubbornly resisting but making numerous counterattacks and many of them very successful.

There is little to tell of this advance of the Germans as little is known. The battle is so gigantic and the information reaching us so slight and vague and probably distorted regarding the various operations that it is not possible to give anything more than a mere sketch of what has happened. Kiev after an heroic fight was finally taken. The Russians then had to fall back quickly in that sector to avoid encirclement.

The Germans then advanced all along the line from Leningrad (still the pivot) to Rostov. Kharkov, Stalino and the Crimea (except Sevastopol, which still holds out) successively fell into German hands in their relentless forward movement.

While the general opinion is that the Nazi advance during the last three months has been slower than Hitler evidently expected, yet, if we will consider a line from Leningrad to Odessa as the radius of a circle with Leningrad as the center and if we swing that radius to Rostov we will find that it has moved over 400 miles, and that considerable territory has been conquered, approximately 180,000 square miles, an area larger than the New England states, New York, Delaware, New Jersey, Maryland and Virginia combined.

Let us briefly discuss the four fronts as they are as we go to press.

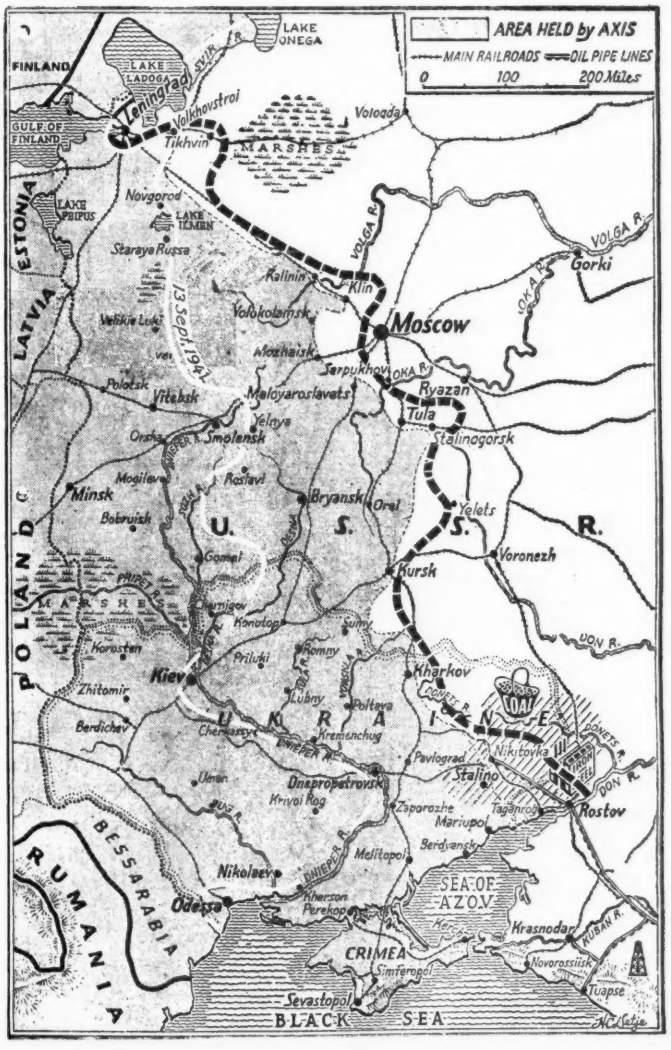
In the northern front the railroad from Archangel (the only ice-free port in the Russian Arctic) to Moscow is still open and supplies are reaching the Soviet via that route from the United States and Great Britain. Finland though still an Axis partner does not appear to be so aggressive as she was. Little is known of the fighting in the extreme north around Murmansk.

On the Leningrad front that city is bravely resisting all Nazi attacks and has just succeeded in reopening the railroad connections between Leningrad and Moscow according to the latest reports. Winter has set in and it would seem that Germany will have to wait until spring before further extensive operations in that sector.

On the Moscow front, probably the most mammoth battles in the history of the world have taken place with the Germans unsuccessfully endeavoring to capture the nation's capital. These battles have been principally in the Kalinin and the Tula sectors with others just west of Moscow. Although the Germans have made progress the Russians have so fiercely counterattacked and so successfully that the Nazis have not succeeded in encircling Moscow, and still are many miles from that city with the thermometer down to 10 to 20 degrees below zero (Fahrenheit) and deep snow. The Germans not so used to such weather as are the Russians are finding the going very difficult. In fact Berlin has from the first part of December stated quite often that the weather is extremely bad, the oil freezes in the tanks and the men freeze to the ground when taking cover, and as the middle of December comes in Hitler has given out that the capture of Moscow, due to the weather, will have to be postponed until later. In fact, Hitler has for some days been on the defensive in this area, the Russians claiming the recapture of hundreds of villages, annihilation of many German divisions and the pushing back of the Nazis many miles.

In the south the Russians during the first part of December launched a big counteroffensive on a hundred mile front from Rostov northwest and have by the middle of December driven the Germans back some 50 to 100 miles and at that time the counterattack was still progressing successfully, though apparently somewhat slowed up. This makes the oil wells of the Caucasus still farther away.

We do know a little about the general tactics of the Axis in their movement forward. We know that they generally approach strategical points on a broad front possibly 200 miles in five or six columns some thirty miles apart, each column consisting in the order named of an armored division, a motorized infantry division and a foot infantry division. Between the columns and on the same general line as the foot infantry divisions are other foot infantry divisions. The armored and motorized divisions are sometimes 50 to 100 miles ahead of the foot infantry division. This movement forward is in the form of a wedge-shaped spear with one column somewhat in the lead



and the others echeloned slightly to the rear on each side. Each motorized division holds what the armored division has captured. Then the foot infantry divisions come up and encircle the disorganized enemy before he is able to reestablish his defense. These foot divisions mop up isolated groups and clear the captured ground thereby releasing the motorized divisions which move on to support the armored divisions and again take over from the armored divisions, holding the ground until the foot divisions again take over. Of course, this whole operation is assisted by the close suppost of dive bombers and combat planes.

In this connection, it is very interesting to know that the Russians learned a lesson from the German-Polish war of 1939 and as early as the spring of 1940 were making deep studies on both preventing and getting out of encirclements. If one will read the article by General Bobrov, Red Army, in this issue entitled "Combat of the Infantry Division Under Conditions of Encirclement" he will see that the Russian bear was not asleep. Also, it would seem that, judging from the many successful counteroffensives by the Russians, they are not easily encircled.

So in the middle of December, the situation on the Russian front might be summed up as follows: Hitler broadcast that operations were over until spring, due to the intense cold; he also stated he was withdrawing in front of Moscow to shorten his lines. The Russians were successfully counterattacking from Leningrad to Rostov, and the outlook did not look at all bright for the Nazis. The Cossacks were working havoc behind the German lines and the Russians have just reported the organization of a special army of 500,000 capable of operating in the coldest of sub-zero weather. It is also reported that Hitler is massing large forces in Bulgaria opposite Turkey, which nation has quite recently made known her acceptance of our lend-lease offer.

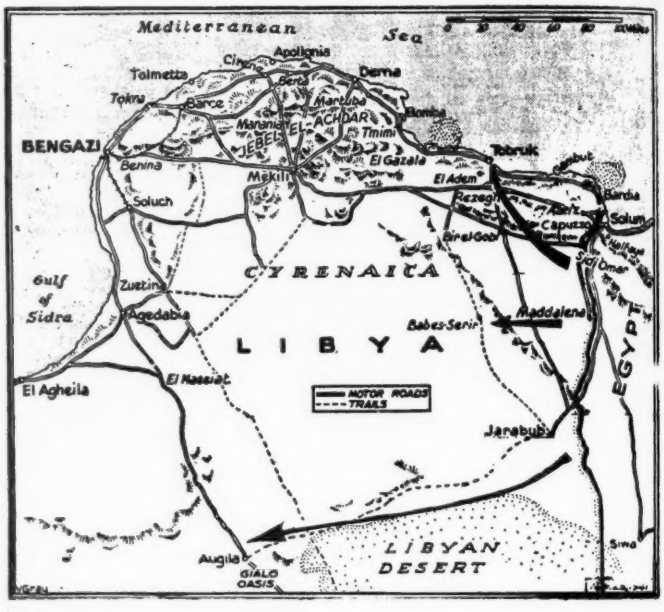
Among the reasons for Hitler's inability to reach his objectives according to his time-table might be listed the following:

1. Severe winter weather for which the German Army was unprepared.
2. Difficulty of supply, especially for its panzer divisions and the air force due to extreme cold.
3. Miscalculation as to the extent of Russia's industrial resources.
4. Fighting ability of the Russian Army.
5. Failure to learn the lessons of 1812.
6. Failure to protect their line of communications adequately, and widespread and apparently effective guerrilla activity.
7. Failure to correctly estimate the power of the Russian reserves.
8. Increasing Anglo-American assistance to Russia.

The Libyan Battle

After about seven months of military inactivity in North Africa, the British Army supported by New Zealand, South African and Indian troops, launched an offensive at dawn 18 November, that may prove to be one of the most important battles of this war. The offensive began on the Egyptian-Libyan frontier, and the British initially moved westward toward the points: (a) Tobruk, on the north African coast; (b) Babes-Serir, about 85 miles south of Tobruk; (c) Gialo-Oasis, roughly 260 miles southwest of Tobruk.

The movement toward Tobruk appears to have been the most important because of the severe encounters reported in that vicinity. At first, the British divided the Axis forces, which, however, later effected union. The most recent re-



ports state that the Axis forces have been driven 40 miles west of the Tobruk-Rezegh vicinity to an area southwest of El Gazala.

An important aspect of the Libyan battle has been the struggle for supply lines. The Axis have transported supplies by airplane from Crete and other sources, and also by vessels in the Mediterranean. To oppose the delivery of supplies, the British have used fighter planes and naval vessels with notable success. On land there has been vigorous activity, particularly by the British, to cut off supply routes open to Axis troops.

Little has been heard of the movements of the British toward Babes-Serir and Gialo-Oasis. Perhaps this was merely a raid.

The disposition of forces, as well as local successes and reverses, has been confusing. When the Libyan battle began, the British stated they had 250,000 men and officers ready to participate in the offensive, including all forces, land, air, and naval. It was reported the Germans initially had at least three armored divisions. In addition to these it is believed there was probably one Italian division.

In general, the British appear to be in control of the situation with encouraging signs of victory for them.

The Battle of the Atlantic

In general, it may be said that the battle of the Atlantic is progressing favorably for the Allies.

Prime Minister Churchill reports that almost 1,000,000 tons of Axis shipping were sent to the bottom or seriously

damaged in the four months ending in October. British merchant shipping losses were cut from a 500,000 ton monthly average for the four months, ending in June, to a 180,000 tons a month in the four-month period ending in October.

Notwithstanding the success of British and American shipping through submarine infested waters and war zones, vessels have been attacked and either damaged or sunk. Since the beginning of the war, some ten American owned or operated ships have been sunk. One vessel, the U. S. destroyer, *Kearney*, was torpedoed about 350 miles southwest of Iceland 17 October, but she survived the attack and was able to proceed under her own power. About the same time that the *Kearney* was attacked, the State Department announced that the *Lehigh* and *Bold Venture*, merchant vessels, were sunk apparently by German torpedoes, the former off the west coast of Africa, the latter on the north Atlantic route south of Iceland. About a week later, an old U. S. destroyer, *Reuben James*, was sunk in the North Atlantic and a U. S. navy tanker, *Salinas*, an old oil carrier, was torpedoed in the same general area as the destroyer, but the tanker reached port despite serious damage.

On 13 November, the British aircraft carrier, *Ark Royal*, was torpedoed east of Gibraltar, and sunk the next day despite a desperate effort to bring it safely to port. A German bulletin announced that two Nazi U-boats attacked the *Ark Royal* and the British battleship *Malaya*. However, the British reported that the *Malaya* was towed into Britain's fortress harbor of Gibraltar.

After the succession of attacks on American shipping in the Atlantic had taken place, the United States government authorized the arming of American merchant vessels. Since this step was taken, there have been no reports of the sinking of American ships in the Atlantic. Although reports are lacking, it is likely the arming of merchantmen is not the only precaution that has been taken by the United States to reduce the damage to American shipping. Apparently the precautions taken are effective.

Stalin has stated that British and American material aid to Russia "is of great importance and growing continually."

The Cover Picture

(THE MECHANIZED CAVALRY OF TODAY: A DIAGRAMMATICAL DRAWING SHOWING MEDIUM CRUISER TANKS IN ACTION.)

The British cruiser tank of to-day is a very notable weapon of offence, and though the Mark IVa (see Cover picture) is not our latest type, it is none the less well able to hold its own in good company, and is held in considerable respect by the Germans and Italians. It might best be described as the Heavy Cavalry of the tanks, and is the speediest type; it can traverse rough country at over 25 mph and has a speed on the road of about 40 mph. Many of the regiments now equipped with these vehicles were formerly cavalry regiments, and mechanisation has done nothing to diminish the traditional "dash" for which our mounted troops have been famous in the past. Armed with a quick-firing two-pounder gun and a Besa machine gun, it is a fearsome craft to encounter. The four members of its crew need to be well trained to save themselves from sustaining broken bones in the cramped interior of the machine and to be able to fight the "land ironclad" at the same time. The Commander, with his head in the cupola, cons his command and directs his crew by telephone. The driver sits in his little compartment, steering his reeling and bucking mount; the crouching gunner—eye to the telescopic sight—controls the turret with its hydraulic traversing gear. As it fires, the gun recoils to within an inch or so of his right ear, then the loader rams in a new shell. The cruiser tank illustrated weighs some fourteen tons, and costs about 75,000 pounds. New types of this heavily armored vehicle are infinitely more powerful and efficient.—*The Illustrated London News*, 26 April 1941.

MILITARY NOTES AROUND THE WORLD

BRAZIL

Industrial Production:

Before the first World War, Brazil was considered essentially agricultural. However, war has changed the picture; for, according to statistics recently published, the value of manufactured goods now exceeds that of agricultural products. Increases in production between 1920 and 1940, stated in percent, are: rubber goods, 151; paper industry, 48; glass, ceramic, and construction materials, 41; and iron, steel, and other metal industries, 39. Agricultural production represents about 33 percent of the total Brazilian production in 1940.

(News Edition, American Chemical Society)

CANADA

Supplying Money, Convoys, Men:

Canada has been at war for over two years. Realizing that victory will come only through the utmost exertion, our northern neighbor has mobilized its natural resources, its industries, and its manpower to a degree without precedent in Canadian history. Canada with a population of 11,300,000 is allotting $2,500,000,000 for the year 1941 which is more than she spent during the entire four years of the World War. This amount represents about two-fifths of the nation's total production. The expenditures are being used to expand the dominion's heavy industries, to maintain a growing army, to enlarge its fleet, and to send equipment and food to the British Isles. So far these shipments have totaled nearly $1,500,000,000 sent largely on credit. Canada's fleet, in cooperation with the British navy, has already convoyed about 30,000,000 tons across the Atlantic.

When the war started, Canada had a fleet of 13 relatively small ships. Today the Canadian fleet consists of about 250 ships including merchant cruisers, destroyers, and auxiliary vessels. By next spring, if production schedules, are met, the fleet will number approximately 400 vessels. It is not a fleet designed for sea battle on a large scale. But, it is capable of rendering great help in the important task of keeping the sea lanes to Britain safe for merchant vessels.

When Canada formally declared war against Germany, its troops numbered 10,000 men. Today, the Canadian army numbers over 500,000 men including home defense reserves and an active force. The home defense reserves are not liable to service outside the dominion. However, the active army, about 338,000 of them volunteers, may be sent to any war front and some of them are already in the British Isles.

(The American Observer)

Canada's Aircraft Industry:

United States is not the only country in this hemisphere that has ordered "full speed" ahead on aircraft production. Canada's aircraft industry is and has been rapidly on the rise. It has been increased more than 30-fold in the last two years, according to Ralph Bell, Director-General of Aircraft production in the Dominion.

In the years before the war, Mr. Bell points out, Canada built fewer than 50 planes a year, had never built a modern fighter or bomber, and employed on the average of less than 1,000 persons. Since wartime, however, more than 50 planes are turned out a week. Being constructed in Canada today are everything from elementary trainers and fighters, to bombers and great coastal reconnaissance flying boats. The industry employs more than 30,000 workers, at least 25,000 of whom have had to be trained from the ground up.

Another interesting fact about airplane production in Canada, according to Mr. Bell, is that more women are employed in the industry today than the entire total of pre-war workers in the aircraft industry. Women are to be found working on such important jobs as the make-up of the electrical wiring, metal sub-assembly work of all kinds, as well as the vitally important job of welding and riveting.

So, the aircraft industry of Canada has been moving steadily forward in step with other defense and war industries in the Dominion.

(London Times)

GERMANY

Flying in the Russian Winter:

Germany has had years of experience in operating airplanes in the severe weather of East Prussia in winter where conditions are similar to those on the Russian front. This experience has led the Heinkel, the Arado, and the Junkers companies to build ski undercarriages for the German airships. Also, de-icing apparatus probably is as advanced in Germany as in any other country. Another source of trouble with winter flying was eliminated when the Germans built their airplanes without carburetors, thus preventing any motor trouble that might result from the freezing of water in the gasoline in the carburetor.

Should Germany decide to operate over Russia in the winter, the Nazi air force will be capable of doing so. If

the hard weather of a Prussian winter defeats a war of movement and compels the Germans to dig in (as the Germans did in the static year in France) there will be much less work for the air arm to do on the Russo-German front. With little need for air operations on this front during the winter, a large portion of Germany's air strength may be detached for duty elsewhere.

(The Aeroplane)

Plastics for Planes:

A German Messerschmitt 109 fighter plane having crashed in England has been critically studied by American scientists to determine what materials, particularly plastics, were used to manufacture the plane. Plastics are materials such as bakelite, cellophane, celluloid, rayon, and many other substances prepared by synthetic chemical processes. In German military aircraft, many uses have been made of molded or sheet plastics. Some are paralleled in the United States and British aircraft, others are new, and still others are absent from the German plane. Major new uses were noted in the leakproof gas tanks. A new type of supporting member to hold the gas tanks in the wing was made, using molded phenolic plastic for the supporting ribs. The authors state, "bullets hitting a metal supporting rib would likely tear off large metal fragments which, entering a tank, would make such a large hole that leaks would undoubtedly result. A bullet striking the plastic support would shatter it into relatively small fragments with insufficient power to penetrate the tank wall.

"A lack of plastics was discovered in the radio equipment. Where American manufacturers used molded and laminated phenolic plastics for insulation and structural members in radio sets, the German equivalent used heavy ceramic materials with less operating efficiency. The result was a set twice the weight of a comparable American product, with lowered efficiency. Substitution of ceramics for plastics in such a critical application is interpreted by a committee of the Society of the Plastics Industry to mean that large scale uses of these plastics in German military equipment have made heavy demands on the country's productive capacities.

"Conventional uses of plastics in this plane were in the laminated plastic-and-glass bullet-resisting windshield, the transparent cockpit cover of acrylic resin plastic sheet, and the instrument panel."

(News Editions, American Chemical Society)

GREAT BRITAIN

Plastics in New Uses:

The R.A.F. showers incendiary "calling cards" on German forests and grain fields. These "calling cards" are small plates of cellulose nitrate plastic which, once ignited, burn rapidly with a hot flame. These miniature incendiaries are die-cut to contain a lump of phosphorus. Incombustible as long as it is immersed in water, phosphorus flares into flame on exposure to air. Dropped from tanks in R.A.F. bombers, the phosphorus flames and ignites the containing plastic at varying intervals of time after reaching the ground. If dropped during wet weather, these "calling cards" may not ignite until several days after they strike the ground.

There are two other significant and interesting military uses to which the British have put plastics. (1) A clear colorless plastic prepared from cellulose acetate has been made into protective face masks for the army in Egypt, protecting desert fighters from the cutting blasts of sand storms. The plastic is far more flexible than glass and unlike glass does not break easily and if it does break it will not shatter. (2) Some 9,000 distinct molds are being produced to make available plastic eyeglass lenses for men in military service who must wear glasses. The nonshatterable lenses will be made of polystyrene, and optically clear plastic, with a special treatment to increase surface hardness. They can be duplicated by the thousands so that replacements will be no problem.

(News Editions, American Chemical Society)

Camouflage in the R.A.F.:

The Royal Air Force has adopted a set of new methods in the camouflaging of their airplanes. For their fighter command planes they have painted the upper surfaces of the plane dark green and grey (seven parts grey and one part black). The under surface is light grey, with yellow stripes six inches deep along the front of the leading edge of each wing beginning half-way along the span towards the tip.

Recognition markings for the bomber command planes are a spinner and a band around the tail. The squadron markings are in light blue green on each side of the fuselage. And the fin is in red, white and blue vertical stripes; the red in front.

All surfaces of the bomber command planes are dull black except for the top surfaces of the wings, tailplane and extreme top of the fuselage, which are dark green and grey. The undersurfaces are black. The squadron letters are in grey and the registrations markings are painted red or grey.

The coastal command planes are painted very light blue on the top surfaces, with white-grey on the under surfaces. The other markings are the same as the fighter command planes.

(The Aeroplane)

ITALY

Hopes and Despair:

Observers are agreed that (1) the Italian people are dispirited, (2) their military machinery is not operating smoothly, (3) and what they dread most is a victory which will make the Third Reich dominant in Europe.

The Italian people have been bitterly disappointed in the performance of their navy. In combat with British naval units, Italian warships have generally fared badly; often for months Italian battleships have had to cling to the shelter of shore bases sometimes surprised by the British who pierced Italian coast defenses in bold and telling raids.

The Italian Navy has sustained serious losses. Estimates indicate that it has in service only half its original

number of battleships. The losses include personnel. Allen Raymond, correspondent in Rome for the New York *Herald-Tribune*, reports such a large share of the Italian naval personnel has been lost that "mere boys, six months out of the naval academy, are becoming full-fledged lieutenants with commands for which they have no experience." One result of all this trouble has been apparent lack of courage among Italian naval personnel. Italian naval units have abandoned their missions and steamed away when they sighted the British.

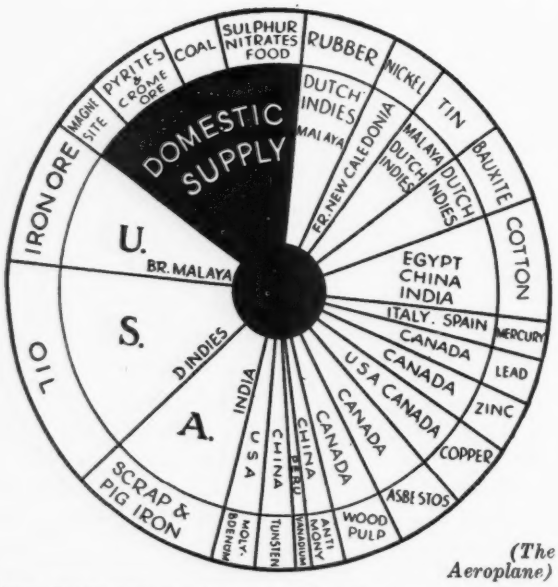
The performance of the Italian air force has generally been disappointing to the Italian people and their allies. Italy lacks raw materials. She must depend on Berlin, and does not have funds available to replace the large losses of planes. At the start of the war, Italy was said to have 6,000 planes, but now estimates place the Italian air force at 2,000 planes.

Another significant fact which is discouraging to the Italian people is that the fascist regime has little to show for the large casualties and the vast expenditure involved in the war. It has lost its Ethiopian empire, Eritrea, and its possessions in Somaliland; it has submitted to German control of Italian industrial activities and German influence in nearly every important activity within Italy.

The Italian people are victims of numerous restrictions and successive military defeats so that a wave of grumbling throughout Italy is evident, according to the reports of first-hand observers. The Italians are making quite outspoken criticism; it appears in some sections of the press, it crops up in daily conversation among Italians; they complain against the trainloads of food being shipped out of their country to their Axis partner across the Brenner Pass; they complain against German "administrators" now to be found in virtually every department of the Government.

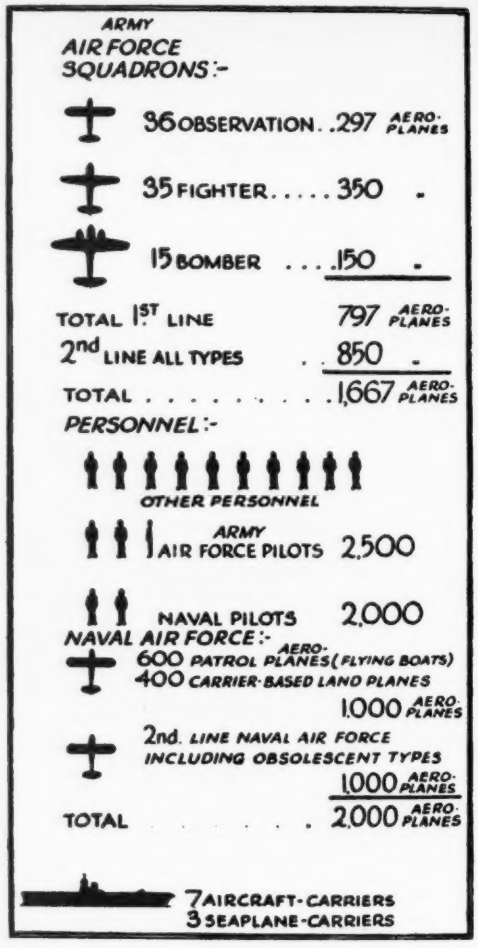
(The American Observer)

JAPAN



(The Aeroplane)

THIS DIAGRAMMATIC CHART IS AN INDICATION, ACCORDING TO *The Aeroplane* (BRITISH), 29 AUGUST 1941, OF JAPAN'S SOURCES OF STRATEGIC RAW MATERIALS.


ARMY
AIR FORCE
SQUADRONS:-
36 OBSERVATION . . 297 AERO. PLANES
35 FIGHTER . . . . . 350 "
15 BOMBER . . . . 150 "
TOTAL 1ST LINE 797 AERO. PLANES
2nd LINE ALL TYPES . . 850 "
TOTAL . . . . . 1,667 AERO. PLANES
PERSONNEL:-
OTHER PERSONNEL
ARMY AIR FORCE PILOTS 2,500
NAVAL PILOTS 2,000
NAVAL AIR FORCE:-
600 PATROL AERO-PLANES (FLYING BOATS)
400 CARRIER-BASED LAND PLANES
1,000 AERO. PLANES
2nd. LINE NAVAL AIR FORCE INCLUDING OBSOLESCENT TYPES
1,000 AERO. PLANES
TOTAL . . . . . 2,000 AERO. PLANES
7 AIRCRAFT-CARRIERS
3 SEAPLANE-CARRIERS

THIS ILLUSTRATION FROM *The Aeroplane* (BRITISH) 29 AUGUST 1941, IS A CONCEPTION OF THE ARMY AND NAVY AIR ARMS OF JAPAN.

Lacks Oil and Raw Materials:

Japan's cooperation with the Axis and her strategic position in the Western Pacific have made her a menace to the peoples of a wide area around. Now, that Japan is denied imports from the English-speaking World, her chief sources of supply are severely curtailed, and it is doubtful that Japan can maintain a long exhaustive war. Indo-China, now cotrolled by Japan, can furnish some valuable minerals, but oil and some important raw materials must be sought elsewhere.

(The Aeroplane)

Shipping Under Unified Government Control:

In order to unify the operations of all ships under government control, the Japanese government has announced a plan made up of three parts: (1) shipping; (2) seamen, and (3) shipbuilding.

The government plans to requisition all ships and loan them to a special corporation, that will have the responsibility of planning for marine transportation and the assignment of ships, as well as the task of paying shipowners fees fixed by the government. Freight rates are to be fixed by the government, and any losses arising from the state management of shipping will be made up. Also a part of the plan is the coordination of loading and unloading operations in the chief ports and harbors.

Under the plan, the Japanese government has wide powers over the training, wages and service of seamen; the families of all seamen will receive allowances in the event the seaman is killed or injured on duty.

As for shipbuilding, plans have been formed for the government to undertake management of the principal shipbuilding yards and factories turning out engines for ships and parts. They also plan to establish a program of building and repairing ships and extending present facilities.

(Foreign Commerce Weekly)

PERU

U. S. Buys Peruvian Metals:

Under an agreement signed by the Peruvian government, the United States has undertaken to purchase essential minerals of military importance produced by that republic which are not absorbed in the normal course of business by western hemisphere countries. Covered by the agreement are copper, lead, tungsten, vanadium and zinc. Peru ranks ninth in world copper production and possesses the chief deposits of vanadium of commercial importance to be found anywhere.

(Pan-American News)

RUSSIA

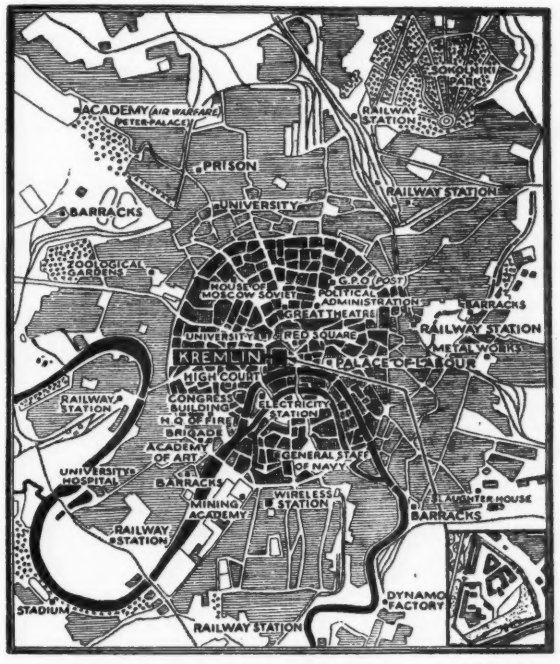
Russian Industrial Trek Eastward:

The U. S. S. R. totals one-sixth of the earth's surface, and only about 7 percent of the Soviet territory has been invaded by the Germans. Behind the Volga River, 350 miles to the east of Hitler's easternmost advance, lies 85 percent of the U. S. S. R.

Thus far, Russia has lost only about one-third of its pre-war industrial capacity. The principal losses have been in the Leningrad area and the Ukraine. Also, a great part of Moscow's industry has been immobilized. In order not to sustain further industrial losses, the Russians have rapidly been moving their industrial plants eastward. The newly created industrial areas are: The Ural mountains and the district immediately behind them, the Kuznetsk basin next to *Outer Mongolia*, and the Tashkent region in the extreme south near the Afghanistan border. These areas include such great centers as: Magnitogorsk, in the Urals, whose iron and steel combine is larger than any in Europe; Tagil, in the Urals, whose huge automobile production machinery is now employed making military vehicles; and Novosibirsk, in the Kuznetsk basin whose busy factories produce carburetors, armatures, railway equipment, tractor parts, leather goods, and foodstuffs.

This newly developing eastern industrial front is abundantly supplied with vital natural resources, with the exception of mercury and manganese. It is estimated that the Kuznetsk basin has five times as great a coal reserve as has the Donets Basin, now partly in German hands. The oil wells in the fields adjoining the Ural mountains have been drilled and developed, and the tillable areas east of the Russo-German frontier potentially can be cultivated to compensate for the agricultural losses suffered because of the Nazi invasion.

(Time)



(The Aeroplane)

THIS MAP OF MOSCOW WAS REPRODUCED IN *The Aeroplane* (BRITISH) FROM A GERMAN NEWSPAPER, AND INDICATES "MILITARY OBJECTIVES THROUGH GERMAN EYES."

U. S. S. R. Oil Situation:

The main oil producing area in Russia is in the southeastern Caucasus region around the Apsheron Peninsula, with Baku the major producing area. Baku is on the western edge of the Caspian Sea. Farther north in the Caucasus region is Grozny and Maikop, both of which are great centers for oil production. Outside of the rich oil producing land in the Caucasus, is the Ural-Volga area. Center of the oil activity in this region is the Emba area, near the mouth of the Ural river, in the southern part of the great Ural-Volga area. The Emba region contains such productive fields as Iskane, Dossor, Makat, and Koschagil.

At Ivanovo, near Moscow, and Penza, west of the Volga, have been opened new and rich oil producing plants. Ukhta and Izhima near the Barents Sea, and the Ukraine oil fields at Romny and Poltava, are great oil producing centers. However, on the whole, most of all the oil produced in Russia comes from the Caucasus region, and the rest comes mainly from the important areas mentioned above.

The average crude oil production in Russia, using 1939 as a typical year, is 30,000,000 tons, barely enough for the domestic consumption and military reserves of the U.S.S.R.

Assuming that Hitler takes the Caucasus oil region, it is doubtful if the oil produced at Baku will be sufficient to maintain the Russian needs. This is because the economic and military needs are barely supplied by the total oil production of the country. So, should Hitler be successful in taking the upper Caucasus region, it would seriously impair the

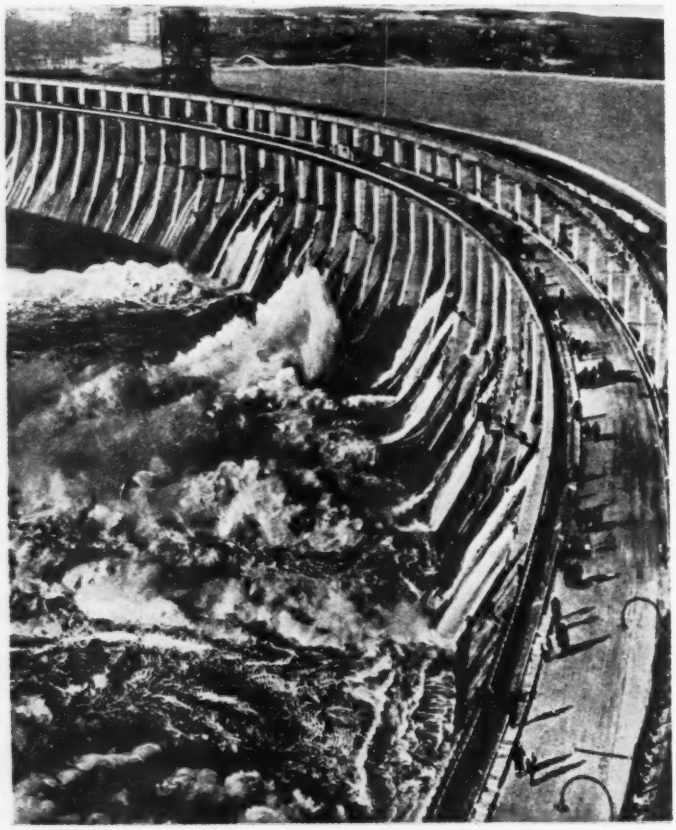
Russian war effort. However, should Germany get the oil, it would be of little use to them unless it was refined, and refineries can be easily destroyed by the Russians.

(The Engineer)

Dnieper Dam:

The Dnieper Dam, pride of the U.S.S.R., costing some $500,000,000, supplied all industrial power to western Ukraine until it was ordered by Stalin to be destroyed. Although there was little in the U.S.S.R. of which its owners and creators were more proud, the work was destroyed in a moment so that it would not be of service to the Germans. The most important significance of this act is that it exemplified the Russian determination to sacrifice everything rather than abandon the struggle.

(London News)



(Illustrated London News)

DNIEPER DAM

Russia's Railroads:

The railway net of the Soviet Union in 1937, measured 53,600 miles of track, an average of 4.07 miles per 1,000 square miles of Russian territorial area. At this time Germany had 115.8 miles of railway per 1,000 square miles of territory. Of the 53,600 miles of track in Russia in 1937, 16,430 miles were double track. At this time, the Soviet had about 23,000 locomotives and 800,000 freight cars. According to these figures, Russia had only some 1,300 more locomotives and 225,000 more freight cars than Germany. In the U.S.S.R., only 8 to 10 percent of the trains traveled on schedule; the railway personnel was sometimes unreliable; the management was non-existent or inefficient.

(Militär Wochenblatt)

UNITED STATES

Pacific Bases for U. S. Navy:

The U. S. Naval Bases may be classified into two groups, (1) those under the U. S. flags (2) those under British and Dutch flags that probably will be placed at our disposal whenever we ask for them. Hawaii, Guam, and points in the Philippines are examples of bases directly under the American flag. Singapore and some points in the Netherlands Indies are examples of bases that are under foreign flags but will be at our disposal. The British have reason to be thankful for having established a base at Singapore. Without this base, it is questionable whether an American or British fleet could prevent Japan from seizing the Malay States and the Netherlands East Indies.

The naval base and the city of Singapore are on an island containing about 220 square miles of land and lying 60 miles north of the equator. One can get a glance at the naval base if he goes to the northern part of the island where it is separated from the Asian mainland by the narrow straits of Johore. Here are to be found machine shops, power plants, oil storage tanks; gigantic cranes that can lift 16-inch guns from ship mountings; a huge gravel dock, 1,000 feet long, where a battleship larger than any yet afloat can be docked quickly for repairs and made fit for further fleet duty; and finally an almost equally huge floating dock that can be towed out to sea. Of all the British naval bases that will be available to the United States, Singapore would be the most important in case it becomes necessary to fight Japan. The British have, however, many other naval bases that might be valuable to the United States. An important one is at Hong Kong, China, another is at Port Darwin, on Australia's northern coast, and another at Newcastle on the eastern shore of New South Wales, Australia.

The United States has done a thorough job of establishing "a naval arsenal" in the Hawaiian Archipelago. Our naval base in that region is located on the island of Oahu which was selected for two reasons; (1) there are ample port facilities at Pearl Harbor located on the south side of the island (2) the natural protective features give assurance against successful enemy assault. Surrounding Oahu and extending for many miles out to sea are dangerous coral reefs, through which no modern deep-draft vessel can navigate. Channels have been dynamited and dredged to Pearl Harbor and to Honolulu, also located on Oahu; it is through these narrow lanes alone that ships can approach the island. Even then they would do so within range of the heaviest shore batteries.

(The American Observer)

New Winchester Carbine:

The U. S. Army has adopted the Winchester carbine as the light short rifle best suited to the rugged use of military service. The carbine will replace the .45 caliber pistol among infantry troops. Other branches will replace the pistol with the carbine to an extent considered necessary for their mission in combat. The offensive firepower of the infantry regiment is estimated to be increased 33 percent by this new weapon. Its use will enable men in rear echelons, service commands, headquarters organizations, and heavy weapons

companies to dispense with formerly needed protection provided by riflemen who can be released for other combat duty. In the infantry, only field officers, men who carry the tripod and gun in machine-gun crews and men who carry the gun in mortar crews will be armed with the pistol.

The new carbine is seven and one-half inches shorter and almost four and one-half pounds lighter than the Garand. It will have a sling when issued to the individual man and be placed in a boot when carried by horses or trucks.

(The Reserve Officer)

Defense Production:

According to the estimates of T. P. Wright, OPM (Office of Production Management) expert, the United States and Britain are actually producing more warplanes than the combined Axis powers and conquered countries. Britain now produces about 1,800 planes a month; the United States about 2,000 a month; Germany about 2,250 a month. The United States will produce in 1941 about 19,000 planes, in 1942, 39,000, in 1943, 50,000. Early next year we shall be producing 1,000 tanks a month, and by the end of the year, 2,600 tanks per month.

(The American Observer)

Component Parts:

As of 9 October 1941, the estimated strength of the Army of the United States was 1,588,500 officers and men. The breakdown is as follows:

Regular Army	537,500
National Guard	270,000
Reserve Officers	76,000
Selective Service Trainees	705,000
Total	1,588,500

(The Reserve Officer)

Mobile Tailor Shop:

A recent development at Camp Lee, Virginia, Quartermaster Replacement Training Center, is a rolling tailor shop to provide soldiers in the field with the services of their home post. The apparatus is mounted on two trailers and is technically known as a Mobile Clothing and Textile Repair Unit. The first section is designed to repair clothing of all types; the second section handles heavier materials such as blankets, webbing and tent fabric. The clothing repair section is equipped with six sewing machines, one button machine and one cylinder darner. The other section has four sewers, one over-edging machine, and one flat darner. The combined unit carries its own generators for light and power.

(The Reserve Officer)

A steady hand in military affairs is more requisite than in peace, because an error committed in war may prove irremediable.—Bacon

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War educates the senses, calls into action the will, perfects the physical constitution, brings men into such swift and close collision in critical moments that man measures man.—Emerson.

A nation is not worthy to be saved if, in the hour of its fate, it will not gather up all its jewels of manhood and life, and go down into the conflict, however bloody and doubtful, resolved on measureless ruin or complete success.—Garfield

Foreign Military Digests

Digests of articles from foreign military periodicals; other items of interest from foreign publications are summarized in the Catalog of Selected Periodical Articles.

Japan's Air Power

[Condensed from an article by Dr. Victor L. Gruberg, in *The Aeroplane* (Great Britain), 15 August, 1941.]

The geographical distribution of the far-flung Island Empire of Japan renders some of its vital parts particularly vulnerable to air attack.

This is particularly true of the important sector Tokyo —Yokohama—Fusan, which is close to the Russian air bases at Vladivostok, a danger which has been a constant factor in Japan's air strategy.

Even more exposed than the "mainland," though politically less important is Manchukuo, where Japan is expending vast sums of money and much effort in developing the natural resources which are to compensate her for her poverty in strategic raw materials. Russian bombers could easily cripple the Japanese oil industry in Sakhalin and Manchukuo.

In the Pacific sector, Japan's strategic position in the air has been appreciably strengthened through the recent acquisition of bases in French Indo-China.

Moreover, Japanese naval forces having the advantage of operating in home waters, could effectively collaborate with the air forces and help to maintain their supplies in the more advanced bases.

Favorable as Japan's air strategic position in the Pacific appears in the light of a geographic survey, its advantages are offset by the British-U.S.A. triangle of air and naval bases Singapore—Manila—Guam, which lies athwart Japan's air and maritime communications in the Pacific. The existence of the Anglo-Russian Alliance may also act as a brake upon any precipitated action by Japan; for so long as the Russian air force has still an effective striking capacity, Japan may well prefer to sit on the fence rather than lay herself open to an air attack on her vulnerable rear.

Yet the main reason why Japan may not be able to exploit fully her favorable geographical position in the Pacific is her lack of adequate air forces for the effective operation of her bases.

An Imperial Decree in 1936 reorganized Japan's military air forces into a separate arm under an army general. It is significant that the supremely important task of the command of the air force was and still is entrusted to an army man and not to one of the senior officers of the air force. The lack of highly skilled men sufficiently experienced and possessing the abilities necessary for generalship is only part of the explanation. The real reason is to be sought in the traditional background of the Japanese military forces. For whereas the army is rooted in the Samurai tradition and the navy has for generations been connected with certain families in which the naval service is an ancient tradition, the air force being a new arm, is not burdened with such a heritage and has no traditional ties. The army officer, by virtue of his upbringing and traditional education, owes unquestioning allegiance to the Emperor and accepts whatever aggressive policy may be embarked upon; the air force man is more of an individual who thinks and acts for himself independently, retains his critical powers and follows the mystic tradition less blindly. Instances have occurred in which Japanese airmen, with their aeroplanes, went openly over to the Chinese, declaring their disagreement with the policy of wanton and indiscriminate bombing enforced upon them by their superior officers.

An almost impregnable wall of secrecy has surrounded Japan's air forces from their very inception, but, so far as is known, the total strength of the army air force is 1,700 aeroplanes and 2,500 pilots. The naval air force consists of 600 flying boats, 400 carrier-based landplanes, and 2,000 pilots. Japan has seven aircraft carriers and three seaplane carriers. Some indication of the growing attention paid to the development of military aviation can also be gathered from the increased allocation in the Japanese Budget, which reached almost 46 percent of the total military expenditure provided for in 1940.

Although in the initial stages of the Sino-Japanese War, China's air forces were not considered by Japanese military authorities to be a serious factor, further developments have shown that Japan has had to face resolute defensive opposition in the air. The following is a reliable estimate of the losses suffered by Japanese air forces during the past 40 months of operations:

Destroyed by fighters	308
Destroyed by AA fire	164
Destroyed by air attacks on aerodromes	236
Destroyed on the ground by military operations	136
Destroyed by accidents	45
Total destroyed (all types)	889

These figures do not purport to establish a Chinese air superiority. Yet they throw an interesting sidelight on the fighting capacity of China's airmen and clearly indicate the heavy drain on Japan's war resources in the present conflict with China.

The scarcity of essential raw materials is the weak spot in Japan's military structure. She has to go to the United States and the Philippines for iron ore and molyb-

denum, to India for pig iron, to Canada for copper and lead, to Peru for vanadium, to Dutch East Indies for rubber, and to French New Caledonia for nickel. From sources within her sphere of influence she can obtain only about one-third of her iron ore requirements and one-tenth of her scrap-iron supplies. With the exception of Palao, Japan's important aluminum industry has to rely completely on bauxite supplies imported from the Dutch East Indies, Malaya, British India, Canada and other sources. Yet where she feels the pinch most is in the lack of any substantial oil resources. Only 10 percent of Japan's peacetime oil requirements can be found locally, and for the balance she has to look to the United States, Dutch East Indies and Mexico. Particularly acute is the problem of high-grade aviation spirit (fuel) which the United States is reluctant to supply, and Japanese refineries are incapable of producing in the required quantities.

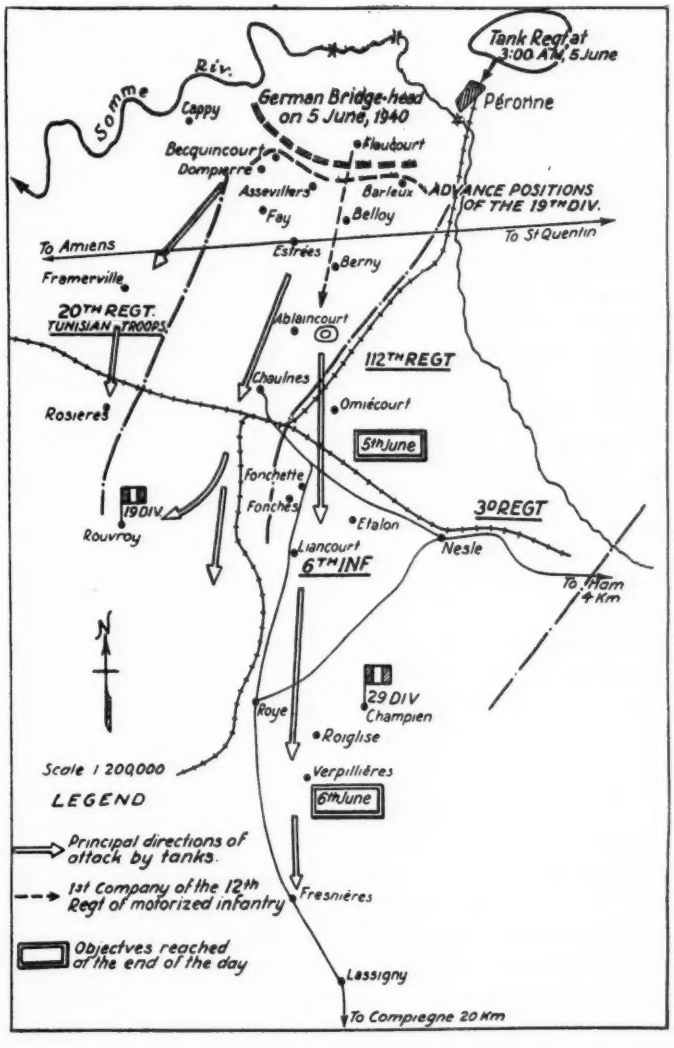
The other factors, productive capacity and technical efficiency, are a further serious handicap in the development of Japan's air power.

It is indeed doubtful whether Japan's industrial effort, strained to peak production in the war against China, could be further intensified. Consideration of all factors upon which the maximum war effect might be based, places Japan's air potential far behind that of the United States, the Soviet Union or any major European Power.

Breakthrough Action of a German Tank Regiment Reinforced by Motorized Infantry on the Somme 5-6 June 1940

["Manoeuvre de rupture d'un regiment allemand de chars renforce d'infanterie motorisee les 5 et 6 juin sur la Somme," by Lieutenant Colonel Perret in *Revue Militaire Suisse*, July 1941. Translated from the French and condensed at the Command and General Staff School.]

This article is especially interesting because it shows the relationship of all arms of the service and how expert are the Germans in the coordination. It will be noted that tank commanders made prior reconnaissance of the area over which they were to attack. The tank attack was preceded by artillery preparation. The position of readiness was about 4,000 yards behind the line and the objective about 6 miles in front. Towns and villages were passed around but fire was delivered into the edges. Apparently German tanks are assigned objectives and general routes or directions, taking best advantage of terrain, instead of boundaries or zones of action. The battalion commander and certain staff officers accompanied the unit and at times led the attack. Heavy tanks were used to tow immobilized tanks to good terrain. Disabled tanks were removed to cover and repaired under protection of fire from friendly tanks. Supply vehicles were kept as far forward as hostile fire would permit.—THE EDITOR.



The attack, then the breakthrough of the "Weygand Line" on the Somme, is the most interesting chapter of Captain von Jungenfeld's book, "This Is How the Tanks Fought," showing clearly how the armored and motorized formations were engaged, first, behind the infantry, then how it moved through the latter to accomplish the breakthrough of the front and the disorganization of the command posts and the rear services of the enemy.

What sort of adversary are the German tanks going up against, and what is the situation the evening of the 4 June? The book of Henry Bidou, *La Bataille de France*, describes with numerous details which harmonize in the extreme, what takes place in this sector.

What has been called the Weygand Line, runs from the Luxembourg border to the sea, along the course of the

Aisne, the Ailette and the Somme. To the south of this latter river, the Germans have succeeded, after having broken through the line at Sedan, in establishing three bridgeheads, at Peronne, Amiens, and Abbeville where, in spite of the efforts of the French, they will succeed in remaining till the beginning of the decisive offensive.

To the south of Peronne, the I Army Corps is in the line. It is comprised, from right to left, of the French 29th and 19th Divisions and the 7th North African Division. All three units are regular troops. On the right, the 29th Division holds the course of the Somme from a point to the west of Ham to the line of the Chaulnes—Peronne railway, a front of 15 kilometers (about 9½ miles) with two regiments (the 3d on the right and the 112th on the left) in the first echelon, and one in the second echelon, the 6th half-brigade of *Chasseurs* (24th, 25th, and 65th Battalions and the 94th Battalion of field artillery) in the triangle of highways between Nesles and Roye. In the center, the 19th Division holds a front of 10 kilometers (about 6¼ miles). It has its three regiments close together and with a great deal of extension in depth. Its security detachments are occupying the villages of Barleux, Assevilliers, Becquincourt and Dompierre in immediate contact with the advanced elements of the German bridgehead which extends from Perrone to a distance of almost 8 kilometers (5 miles) south of the river. Lastly, on the left, the 7th North African Division is strung out along the Somme from Cappy to a point to the east of Corbie or over a distance of 15 kilometers (about 9½ miles) and the regiment which it has on its right, the 20th regiment of Tunesians, adjoins the 19th Division. The majority of these troops have occupied these positions since the end of May. However, a few of the units had arrived scarcely two days previously (as for example the case of the 6th half-brigade of *Chasseurs*).

It is the 19th Division and the regiments on the left (the 112th and 6th regiments of *Chasseurs*) of the 29th Division who are going to have to stand the main shock of the German tank attack.

The instructions of the general-in-chief and those of the commander of the Seventh Army, General Frere, warned the troops to organize all the villages as closed strongpoints capable of resisting an attack from any direction and to shut up the artillery, the antitank guns and the command posts inside them. These strongpoints must be spread out, and extended in depth as far as the division and army corps command posts. Orders are given to barricade and dig in. There must be no thought of retreat. If the enemy breaks through and goes beyond one of the strong points, he is to be subjected to flanking fire and to counterattack. The defense must be aggressive. These instructions were observed to the letter as the story of the German assailant will prove and as will be recognized by the general-in-chief in an order of 7 June. For the 19th Division in particular, the one which is to receive the main force of the attack, all the villages without exception, from the position where it occupied a front directly opposite the German bridgehead to the division command post at Rouvroy, became small fortresses. The division has at its disposal 68 antitank cannon of 25-mm and 47-mm, twelve 75-mm antitank guns and 3,000 mines.

* * * * * * *

Let us return to the German camp north of the Somme. In the evening of 4 June, Captain von Jungenfeld took over the command of the 2d Battalion, which Major Schlothane was leaving on account of his health. The whole brigade of tanks (two regiments) is assembled in the region to the north of Peronne, ready for engagement in the new battle.

On 5 June, at 3:00 AM, Eberbach's regiment takes up a position in a woods in the vicinity of Peronne just as the artillery opens fire and the infantry is moving everywhere to the attack. By 6:00 AM, the 2d Battalion of tanks is already moving up ahead and at 7:00 AM, crosses over the Somme at Peronne. The assailant is perfectly aware of what is to be the new defense tactics ordered by General Weygand. It will not be a matter, this time, as on the Dutch and Belgian borders, of making a single breakthrough, through a linear system of defenses, but they are going to have to fight in a deep defensive zone against an adversary who is determined to fight to the death. At this point, the zone extends to a depth of about 20 kilometers (12½ miles), from Perrone to Roye. It is filled with numerous and well constructed villages and the assailant knows that the French generalissimo has ordered that they all be organized as closed strongpoints. However, on the German side, there is the impression that the French have not yet finished their defensive preparations and, in any case, it appears certain that the French do not believe that there are tanks already on the spot for the job, so soon after their engagement in the north.

At 10:00 AM, Eberbach's regiment is at Assevilliers about 7 kilometers (4½ miles) southwest of Peronne, immediately back of the infantry, the 1st Battalion in the first echelon, the 2d Battalion behind. At 10:30 AM, the command to attack arrives. The enemy is only about two miles to the south, and appears solidly established up to the line of the highway which runs from Amiens to Saint Quentin, which is perpendicular to the direction of the attack. Eberbach's regiment is the left regiment of the brigade. It is to attack in a southerly direction and as its first objective, has a hill to the east of Ablaincourt. It will miss the positions. The other regiment of the brigade is at its right. Farther still to the right, and traveling in the direction of Framerville-Rosieres there is another armored division. This constitutes, therefore, a powerful tank attack—there being at least four regiments, say eight battalions of tanks reinforced by motorized infantry, which makes a minimum of a thousand armored vehicles, a fourth of which were heavy tanks (Model IV tanks of 18 tons). Remember that every German tank battalion is made up of three companies of light and one company of heavy tanks.

This attack takes place here, from Peronne in a southerly direction, because the terrain lends itself to it well in this place, because a favorable point of departure is available and there are great opportunities for deployment and maneuvering. But the principal reason is because, if the breakthrough is successful, it will occur in a particularly vulnerable part of the French defense system, Compiegne. Besides, the commander of the French Seventh Army will understand very quickly the danger threatening, and, as we shall see, will immediately engage all his tank and aviation reserves (which are very small) to ward off the menace which is appearing.

* * * * * * *

When the 1st Battalion of Captain von Lauchert crossed the highway, the 2d Battalion which was following immedi-

ately behind it was caught in a barrage by artillery and antitank guns, "whose violence was not surpassed by any firing of the World War", says Captain Jungenfeld. There is only one thing to do, push on ahead without thinking of preserving our contact with the rear.

As the 1st Battalion approaches Ablaincourt, it is received by a new burst of antitank gun fire, and at one time the author of the story sees six of his comrades' tanks in flames. The 2d Battalion then enters the lines and, adding its fire to that of its companions, succeeds in silencing a few antitank guns and an artillery battery, but the number of tanks being put out of commission keeps growing. They pass Ablaincourt (on the left) and the 1st Battalion reaches Omiecourt (on the Peronne-Roye highway) where strong resistance is again encountered. Again several tanks are destroyed. At noon, the lack of ammunition and fuel begins to be felt. The armored supply cars have not been able to follow. They are going to have to make a stand somewhere, and wait for the supplies and perhaps face a counterattack of enemy tanks. In addition, the artillery which is supposed to support them (each armored division has, as part of its regular organization, a motorized regiment of four groups at its disposal), is still too far in the rear to be able to act on Omiecourt, and it cannot make any change of position toward the front as long as the infantry does not advance. And this infantry is heavily engaged throughout the entire depth of the zone of attack, and as far back, almost, as Peronne, whose bridges are still under fire from the French artillery. The breakthrough is far from having been accomplished and the tanks, which have gone alone far in advance, are obliged to get out of the jam by their own means. The brigade commander, who is in the front line, commands the advance to cease and the tanks to stay where they are till the artillery has had time to neutralize the centers of hostile resistance. A part of the 2d Battalion, therefore, makes an about face and attacks the defenders of Ablaincourt in the rear. In this way the 5th Company manages to take a battery of 75s, while the 8th Company (heavy) destroys two antitank cannon.

Towards the end of the afternoon the supply trucks, in spite of a few casualties, succeed in rejoining the 2d Battalion, with ammunition, fuel, two unit kitchens and the engineer sections. Gas and ammunition have hardly been taken on and we have few moments to eat, when, at 4:30 PM, a burst of enemy artillery fire, at first frontal and on the right flank, surprises the 2d Battalion. This is followed by a few French trench mortar shells. We lose a few men and tanks as a result. But at the opportune moment there arrives a battery of antiaircraft guns, four heavy and four of them light, belonging to the brigade, and saves the day for the 2d Battalion. These remain attached to the 2d Battalion for several days and furnished protection not only against aircraft but against tanks and antitank weapons.

Let us rejoin our regiment of tanks in front of Omiecourt. At 7:00 PM, the brigade commander orders the resumption of the attack in spite of the fact that the contact with the rear has not yet been made and the motorized infantry has not been able to join the tanks and is still fighting desperately for the possession of the strongpoints passed by the tanks. In resuming its attack, the 2d Battalion of Captain Jungenfeld, gets out of the sector which is being strafed by the French artillery, but is soon taken to task by new flanking fire coming from Omiecourt and from more French trench mortars. The brigade of tanks advances, thus, on toward the south, avoiding, again, close range brushes with strongpoints. About 10:00 PM, it reached the heights of Etalon. The 2d Battalion, which has taken the lead during the advance, takes up its position on both sides of the Peronne-Roye highway and occupies the two villages of Fonches and Fonchettes while the other regiment of the brigade remains around Etalon with the command post of the brigade. The night is filled with skirmishes particularly at Fonches which is partly occupied by French infantry.

On 6 June at 5:00 AM, the 2d Battalion resumes its advance with the mission first of gaining possession of the village of Liancourt. A patrol, sent on ahead by battalion commander reports that all is quiet in the village which appears to be unoccupied. This seems strange to the battalion commander, who, up to the present, has run across nothing but towns solidly held by the French. He approaches it therefore very cautiously, one company in the lead followed in the second echelon by the company of heavy tanks while the two others pass one on the right and the other on the left of the town with the intention of later turning back to the center. The resistance is not unmasked till the center of the town is reached and when about all of the battalion of tanks has entered into the village streets and the foremost of them have been stopped by barricades. It is then necessary to conduct an attack from house to house and fire into nearly every window. A hand to hand fight follows, the crews of the destroyed tanks fighting on foot with automatic weapons and hand grenades.

The command post of Colonel Mermet, the commander of the 6th half-brigade of Chasseurs is at Liancourt, and the village is held by the 25th Battalion only 125 of whose men later succeeded in withdrawing along with the rest of the 29th Division.

The 5th Tank Company, which was attacking the village from the left, is suddenly surprised by a flank attack of fourteen heavy French tanks and escapes destruction only because of the intervention of a detachment of the 8th Heavy Tank Company. It was probably a part of the counterattack started at 8:30 AM, northeast of Roye by the French 1st Armored Division, of General Welvert, a division which at that time consisted of no more than one battalion of Model "B" tanks and a battalion of "Renault 35" tanks and which was to retreat at 11:00 AM, after having suffered enormous losses. This armored division and bombing and combat planes, which intervene on the French side the 5 and 6 June, are army reserves which General Frere engages almost exclusively in the sector of the 19th Division, where the German pressure appears the most dangerous.

In the village of Liancourt, there are also French tanks which engage in a counterattack. The commander of the German 2d Battalion, sees himself obliged, as a result, to turn his battalion back when about 300 yards from the village. Sharing the same opinion as the German author, the French defense was, therefore, victorious in this place. This retreat did not occur without heavy losses for the Germans, although the antiaircraft battery had intervened directly in the battle, putting the French tanks under its fire and succeeding in a short time in putting four heavy ones out of commission.

The Germans then call on their artillery and their "Stukas", which by their coordinated efforts succeed in "neutralizing" the enemy resistance at Liancourt. The village is largely destroyed when the motorized infantry, which in the meantime has been harrying the tanks, takes up the attack itself toward the end of the afternoon and makes an assault with the support of the 6th Tank Company. The last resistance is thus broken and the tank regiment can resume its advance, at 6:30 PM, in the direction of Roye, the 1st Battalion in the lead, the 2d Battalion supporting it. All by themselves, the tanks were not able to take Liancourt, brilliantly defended by the French infantry.

At Roiglise about two miles east of Roye new resistance is encountered, and it is necessary to fight before being able to cross the upper course of the Avre. The village is full of solid barricades all under the fire of automatic weapons and antitank guns, and the engineers are forced to blow them up one after the other under the protection of the tanks. The enemy aviation again intervenes and the tank of the battalion commander barely escapes an enemy bomb.

Without other enemy resistance, the tank regiment reaches Verpillieres toward 8:30 PM, its day's objective. The regimental staff and the 1st Battalion Staff establish themselves there for the night, while the 2d Battalion moves on about 6 kilometers (about 4½ miles) further south, to Fresnieres, on the Roye-Lassigny highway, as security for the regiment. It is reinforced there by the antiaircraft battery and by the engineers.

On the evening of 6 June, when the German tanks had succeeded in making a breakthrough of 30 kilometers (about 19 miles) depth, the French 19th Division no longer exists and only a few elements of the 29th Division—125 men of the 25th Infantry Battalion, one company of the 65th Infantry, the 24th Battalion and the division reconnaissance group. All the artillery is either destroyed or captured. That was the balance sheet for the first two days of battle.

* * * * * * *

The night of 6-7 June passed quietly for the German tank regiment, and the morning of the 7th, the motorized infantry (the infantry brigade of the armored division) is first to take the hills commanding Lassigny on the north. This attack is to begin at 2:00 PM. It is violently opposed by the hostile artillery and aviation. They belong, probably, to the army reserves of General Frere. (His army command post was at Vineuil, west of Senelis). The attack was to have begun at 6:00 PM. It is countermanded, then put off till the next day—then finally abandoned. The command decides that the infantry shall go alone. Besides, the latter is to reach the region around Compiegne in the evening of the 8th.

The armored division has broken the way for the infantry, the defense zone south of the Somme has been broken through, the way is open to Paris, it has fulfilled its mission. It is then withdrawn from the front on the night of 8-9 June, and sent toward Saint Quentin from which it is to start out again in a different direction toward Soissons, and Chateau-Thierry.

The Need for an Aggressive Attitude

[From an editorial appearing in *Fighting Forces* (Great Britain), October 1941.]

A recent issue of *The Field* drew attention to the opening paragraph of our (Fighting Forces) August editorial, in which we quoted some remarks made by General Sir Claude Auchinleck. Sir Claude said, "If the war is to be won properly, it must be won properly, not half-won. I have always thought it must be won in Europe—in Germany—on the German's own soil."

"This seems," said *The Field*, "much more to the point than the continued talk of invasion. A tonic to national morale is to think in terms of aggression, as the young platoon officer was instructed to do in the last war. The 'We can take it' attitude can be carried to the point of defeatism."

The Field is quite right. There is too much talk of invasion, too great a tendency to take the bombastic threats of the Germans at their face value. The Navy and Air Force are magnificently aggressive, perhaps almost too much so in the case of the Air Force, who seem to think, to judge by recent speeches by Sir Archibald Sinclair, that they can win the war on their own. But, at any rate, officers and men, and the Higher Command, in both Navy and Air Force have but one thought, to hit the Hun and hit him hard, and with ever-increasing violence.

Our Field Army at home is, of course, spoiling for a fight, but we cannot help feeling that the military authorities show a tendency to acquiesce in the attitude of "waiting and preparing for the inevitable invasion," instead of subordinating everything to the one vital consideration, getting ready to attack the enemy in his own lairs.

There is unquestionably a delay on the part of the Army authorities in keeping the troops, or rather their leaders, to say nothing of O.C.T.Us. and schools, up to date in the experiences and lessons of recent fighting. Authority seems unwilling to let the stuff go out until it has been systematically examined, vetted and analyzed by the Higher Command, lest false lessons and deductions be drawn from it. This is tantamount to keeping the Army in leading-strings, treating officers like infants who have not come to years of discretion and looking on them as not qualified to draw the correct conclusions from the facts as given by those who have actually taken part in the fighting. "Let mother do it for you. Mother knows best," seems to be the attitude.

Reports are, of course, asked for from unit commanders, but not from subordinate officers, and it is just these, who have been in the middle of it, who are most likely to be in the best position to give a first-hand account of what actually happened. The average English regimental officer is shy of talking, still more of writing, about his war experiences, and he is certainly not encouraged to do so. If O.C.T.Us. or the

Senior Officer's School, or even the Staff College, want to get first-hand information from actual participants in the fighting who may be at home, they have considerable difficulty in doing so. And the same, of course, applies to units of the Field Army. Anyone who wants to get a crucial piece of information has to rely on a privately written letter, which, of course, risks coming under the notice of the censor.

What units, etc., want is to get hold of an officer who has taken part in recent fighting, to listen to a lecture from him, and, most important of all, to be able to ask him questions.

Nothing can help more to maintain an aggressive attitude than first-hand knowledge of what our gallant soldiers have done in the theaters of war where they have been actually engaged. Information such as we give in the paragraph "The Hun is Not Invincible" is surely likely to prove a magnificent tonic.

Let there be no mistake. The war will not be won by the bombing of industrial centers in Germany. Hamm has never ceased to function for any length of time, despite all its bombing. Nor will the war be won by our naval blockade. Both these factors are an enormous help towards winning the war, but the *coupe de grace* must be given by the Army. Everything possible should be done to help the Army to play its part as soon as it can possibly do so.

Mountain Artillery on Pack Animals

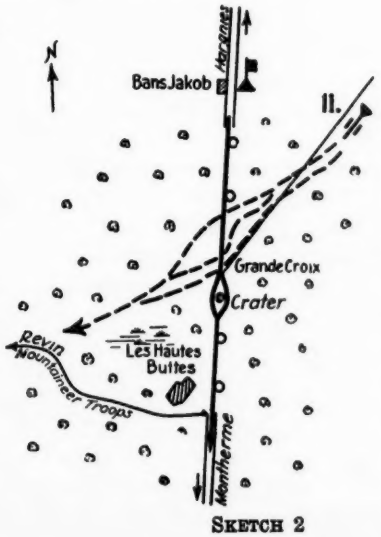
[Condensed at the Command and General Staff School from an article by Major Langrock appearing in *Artilleristische Rundschau* (German) May 1941.]

The usual difficulties of terrain and observations, those encountered due to congestion of traffic and changes of plan, all common to many battles will be found in this article. By attaching a battalion of artillery to an infantry regiment and giving a mission to this unit, a task force is developed. When time permits, the German artillery commander makes recommendations as to the use of his weapons to the division commander.—THE EDITOR.

The experiences of the 2d Battalion of a mountain artillery regiment, participating as part of a mountain division in the low, hill country and the plains of France, indicate advantages in the slow but mobile mountain artillery transported on pack animals. As to the gaining of time and keeping in close touch with the infantry, the advantages are conspicuous.

Experiences noted hastily in a war diary will introduce each of the selected examples, which will then be explained by a narration of the respective events.

SKETCH 1



SKETCH 2

Example 1.

Combat Report of 15 May 1940:

"The advantage of mountain artillery manifested itself in that, despite the congested main road, it was possible to reach the small road Les Hautes Buttes-Revin (sketch 1) leading toward the west without loss of time."

Situation:

At 6:45 AM on 15 May, the commander of the 2d Mountain Artillery Battalion received orders at Haut Fays 23 kilometers (about 14½ miles) east-northeast of Les Hautes Buttes to reconnoiter north of the road Les Hautes Buttes-Revin for observation posts and battery positions from where it could be possible to support the attack of the mountain division across the Meuse River north of Revin. The artillery commander had given the division commander his recommendation of the situation stating it was expected that in the zone facing the division the enemy would defend the strong Meuse sector. Preparations for attack should be kept concealed from the enemy.

Reconnaissance in the dense brushwood of the eastern Meuse Heights was carried on with much difficulty and loss of time. When, at its conclusion, the mountain artillery battalion commander drove back in a motor car over the small road Revin-Les Hautes Buttes at 1:00 PM, and was about to turn northward into the main road Montherme—Bans Jakob (sketch 2) he found it completely choked with motorized columns, heavy motorized artillery and tanks, with two and three rows abreast, so that he must proceed to Bans Jakob, the appointed meeting point, on foot. There he learned from the orders issued by the commander of the rifle regiment (to which he was attached) of the complete change in the situation. The tanks pushing southward via Montherme as well as the neighboring divisions at Givet (sketch 1) and west thereof had gained so much terrain west of the Meuse that the enemy in front of our own division abandoned the defense of the strong Meuse sector. According to air

reconnaissance, the enemy was retreating south of Rocroi and Mezieres.

The mountain artillery battalion had been assigned to the mountain regiment for the crossing of the Meuse, and now it was essential that the battalion follow close up behind the infantry in the direction of the river crossing at Revin. The battalion, meanwhile, had been moved up to position in readiness east of Bans Jakob. The main road which had to be crossed, blocked all movement like a bolt, because most of the motorized vehicles, lined up in several rows close together, were unable to move. In addition to this, the road had been demolished by a gigantic explosive charge at Grande Croix (sketch 2).

The battalion, therefore, packed its equipment on pack animals and, leaving its horse-drawn wagons behind, proceeded through woods and ditches alongside the road. Thus it was able to get through the crammed main road and through a forest impassable for horse-drawn vehicles, and to catch up with the rifle regiment which was already on the march. (War Diary, night of 15-16 May 1940).

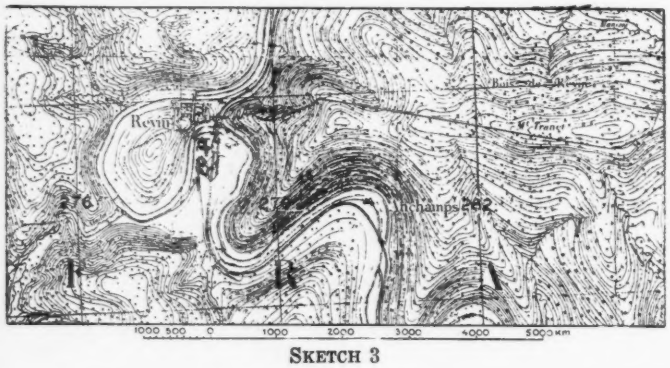
Example 2.

Experiences:

"The building of a narrow footbridge for pack animals has stood the test very well during the crossing of the Meuse, because in that way the whole reinforced mountain regiment, less vehicles, needed not wait for the completion of the heavier bridges."

Situation:

In the late afternoon of May 15, 1940, the 2d Battalion of the mountain rifle regiment was in a position of readiness at the border of the heights falling in a steep slope to the Meuse toward Revin, awaiting orders to cross.

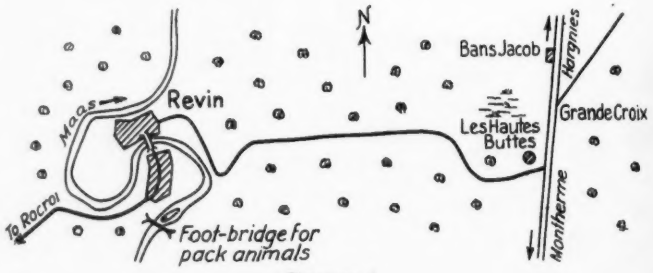


SKETCH 3

The artillery battalion commander went to the commander of the mountain rifle regiment, at that time at the point of crossing. The crossing was carried out with floatsacks and floatsack ferries without enemy disturbance. He there learned that at about 9:00 PM a footbridge for pack animals, about three feet wide, made of second-hand building material, would be finished across the Meuse on which the battalion might cross after the heavy weapons of the advance infantry battalions.

The footbridge had been build by rifle pioneers on a dam where a row of small concrete posts led through the river. Doors and window shutters from nearby houses formed the planking.

At 10:30 PM, the first battery inserted into the rifle regiment—passed across, while the last pack animal of the battalion reached the other shore safe and sound on the following morning at 6:00 AM. Over a steep and narrow serpentine road the mountain ridge on the other side was climbed and the road reached. The crossing, favored by moonlight, was carried out without accident, though one or two of the 300 pack animals of the battalion broke through the thin planking.



SKETCH 4

After a rest of 1½ hours during the night near Revin, the battalion, in full fighting strength, was able to join the further advance of the regiment to Rocroi, moving through the forests with its strong wire entanglements—with many hours' start over the other elements of the division which had been confined to the temporary bridge at Fumay. (sketch 1.) Thus it came about that the pursuit order upon Hirson found the rifle regiment and its artillery battalion far ahead at the point of the division and that neither of them was dislodged from there until 20 May 1940.

Example 3.

War Diary of 5 June 1940.

Extract: (From the paragraph relating to artillery of the division order for position in readiness and attack across the Oise-Aisne Canal of 4 June 1940, 6:20 PM.

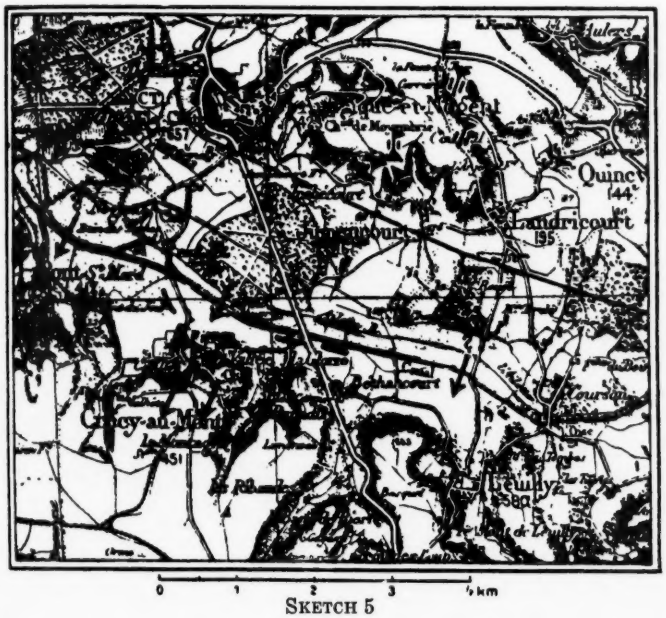
"Batteries of the mountain battalions are to be arranged for change of position in such manner that they can execute the crossing close behind the assault infantry battalions."

Situation:

During the night before the attack the battalion had gone into position south of Jumencourt on the high plateau sloping down toward the enemy side. Observation posts were established where the high plateau breaks off steeply against the valley of the Ailette River. As part of an infantry combat group which had been ordered to cooperate with the regiment of mountain troops in the front line, the battalion took part in the artillery preparation which, after the beginning of the attack on 6 June at 5:30 AM provided for lifting of the fire upon the half slope, then upon the tops of the heights at Crecy-au-Mont rising steeply beyond the canal.

After an impressive performance of the first act—a short time after, nothing could be seen any more with all the smoke and haze—a battery was ordered to the front at 8:00 AM in order to advance under cover of this haze to Bois de Monthizel lying along the canal (the great forest two kilometers or about 1¼ miles south of Coucy-le-Chateau—northwest corner of sketch 5), and to follow the foremost battalion which by this time had succeeded in making a nar-

row breach in the enemy position. At 8:30 AM the foremost infantry had reached Crecy-au-Mont after hard fighting, while the enemy on both banks of the canal still held out. At La Glorie and Le Paradis, our heavy artillery fire could be seen still falling, while strong enemy barrage fire was noticed in the forest of Monthizel and on both sides of Jumencourt. The battalion suffered under flanking fire from the east. On its right, the position was still confused.



SKETCH 5

The battery arrived at the forest of Monthizel without losses. The battery commander had hurried ahead to the canal to look for the place of crossing and for the command post of the battalion of the regiment. From the commander of the rifle regiment he received orders to advance across a footbridge into the terrain north of La Valee where his battery was to be assigned to the foremost battalion. At 9:30 AM, he reported to its commander at Crecy-au-Mont in such manner as to help the battalion along toward the south and protect against flanking fire from the east.

After reconnoitering fire position and observation post, the battery commander hurried back to the crossing point. Just then the first pack animals of the battery started to cross the canal. A short time before, the battery had suffered its first losses from trench mortar fire. Hardly had the pack animals crossed the footbridge when they sank into the swampy soil. The battery commander had to order a withdrawal under enemy fire. While further reconnaissance for crossing possibilities at Pont a Couleuvre proves such at present impracticable due to strong enemy occupation on the other shore, the battery at 12:30 PM, in its prepared position, meets with heavy trench mortar fire and suffers losses of men and animals.

The battery once more is rendered fit for action, but is not employed on account of the poor observation available. Nevertheless, during late afternoon it was the first battery to reach the south bank of the canal by means of a temporary crossing. The situation meanwhile had relaxed owing to the retreat of the enemy behind the railroad embankment south of Crecy-au-Mont.

Example 4.

War Diary of 10 June 1940.

Experiences:

"At the crossing of the Ourcq on footbridges passable only for pack animals, the mountain artillery for hours was the only available artillery on the other shore."

Situation:

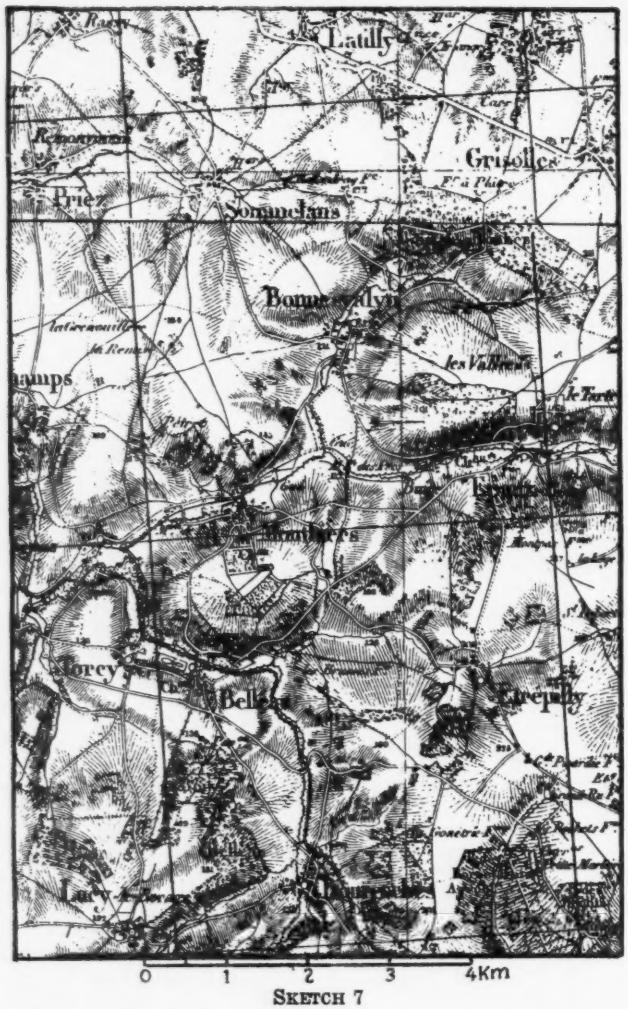
On 10 June 1940, the battalion is in position south of Billy-sur-Ourcq ready to open fire, with observation posts close east of the road leading to Vichel to cover the attack of the infantry across the Ourcq beginning at 9:00 AM.

As early as 7:45 AM, it could be reported that single parties were crossing the river against weak resistance from the enemy. Between 11:00 AM and 1:00 PM the batteries could cross the narrow, but deep Ourcq on temporary footbridges. After attaining the first objective the rifle regiment takes a rest at noon south of Latilly.

SKETCH 6

The battalion commander, who at 11:00 AM finds at Latilly the commander of the foremost battalion, can ascertain that at least up to 4:00 PM the mountain artillery is the only artillery that can be south of the Ourcq.

During the rest, the battery commander is ordered by the battalion commander to march again with instructions to accompany the foremost infantry battalion. After a while, this battalion leaves the road in order to advance upon Etrepilly, (sketch 7), across hilly terrain. In order to be able to follow, the commander prepares the battery for the march.



SKETCH 7

When at 4:00 PM the battalion on the height one kilometer south of Buire, five kilometers or about three miles south of Latilly, takes a short halt. High explosive shells of light caliber strike in the halting space from the right flank. The adjacent unit on the right has been held back. While the riflemen evacuate the endangered terrain, the battery commander quickly decided to go into position and open fire. He caught a firing enemy battery from the flank and then took under fire a series of profitable targets on the hilly terrain north of Lucy-le-Bocage. The range was too great to catch the enemy retreating further to the west.

Examples 1, 2, 4, above, show cases where the transportability and mobility of mountain batteries could be used to advantage also in flat country. To the brave employment in Example 3, complete success was denied because the moment of proceeding was selected too soon and the unfavorable position of the sole possibility for crossing forced the battery to turn back. The example, however, on the other hand shows what special demands may be made upon mountain batteries in unfavorable terrain and in the absence of crossings passable for horse-drawn artillery, also how justified the command is in ordering the timely following up by mountain artillery.

Conferences and Economy

[From an article in *Fighting Forces* (Great Britain), June 1941.]

It is extraordinary with what a light hearted manner Army formation commanders summon conferences to meet at their headquarters, conferences which may involve the officers taking part in them travelling 20, 50, and even 100 or 150 miles by car. Every drop of petrol has to be brought to this country by our merchant seamen, at considerable risk to their lives, and it is surely vital that the utmost economy should be observed in the consumption of petrol. If the conferences involve important operational discussions, there is, of course, not a word to be said, but so often they deal with purely administrative matters, which are not of urgent importance and which, in any case, could be settled by the issue of a few decisive orders. For example, conferences are going on all over the country about the need for cutting down correspondence, and the amount of paper used in correspondence. Here, surely, the matter could be dealt with by a few drastic orders, insisting that economy in this respect must be observed, and giving detailed instructions as to how this is to be done, orders affecting the formations issuing themselves just as much as the recipients of the orders.

Another point, too, is that when conferences are really necessary, the minimum number of people necessary should be summoned to attend. Often a lot of representatives are summoned from this or that department, many of whom do not open their mouths, and so have little or no bearing on the decisions arrived at. They could equally well be informed what those decisions are at a later date, and told to get on with the job.

A third point is that whoever takes the chair should be able to deal with the agenda with decision and dispatch. The amount of irrelevant discussion that is often allowed is lamentable. One cannot imagine "Big Business" conducting its conferences in the easy-going sociable manner that is often indulged in in Army conferences. Yet, in fact, the Army is the biggest business of all.

It is a curious fact that there has always been a passion for conferences in the Army, and the War Office has probably been the worst offender of all. It is really a confession of weakness, probably induced, in a large number of cases, by the fact that the individual in authority has not sufficient strength of mind to stand up to the Treasury, and so summons a conference in the hope of reaching a modus vivendi, which will somehow or other fill the bill, and at the same time satisfy the venomous demands for economy of the Treasury officials.

Economy is, of course, necessary, but the pettifogging, childish methods of enforcing economy, so often put into practice by the Treasury in Army administration, are sometimes past belief, in view of the fact that there is a war on. And it is always the personnel of the Army who are the biggest sufferers. Allowances, tradesmen's rates of pay, and similar payments to personnel, it is in these cases that the Treasury's pettifogging methods are seen at their worst.

The Conditions of Fighting in the Leningrad Sector

[Condensed from an article prepared by *Militärische Korrespondenz*, 13 September 1941.]

The confirmation of the German reports of the penetration of Hitler's troops into the immediate vital sphere of Leningrad raises the question of whether the Soviets have adequately undertaken the defense of this city. Petersburg, or Leningrad as it is called today, was just recently described by the Soviet marshal, Voroshilov, a veteran of the Communist Revolution who rose from the ranks of labor, as the cradle of all Russian revolutions which his troops would strive to defend with all the means at their command. The first defense measures had probably been introduced when the German troops achieved their first important successes in the Baltic countries and the Soviets became aware of the danger threatening their second capital. Even as early as the end of June 1941 appeals were made to the personnels of industrial plants in the region of Kingisepp and Volosovo to take part in work on fortifications. In accord with the long-standing practice of the country of letting women, too, do heavy physical labor, women and older children, as well as men, were employed to throw up vast earthworks north of the Luga River. These did full honor to the traditional Russian talent for constructing any trench of fortification works, and they were in fact later considered extraordinarily serious obstacles by the panzer divisions rolling on Leningrad.

Vast tank trenches had been dug about 2 meters deep and 3 meters wide, and the heaped up earth had been ingeniously covered with fir trees—in one sector more than 4,000 of them were counted—and clumps of sod. This was done so cleverly that the German tanks became aware of the obstacles only when they were close upon it. About 3 kilometers farther on a new combat obstacle was met, consisting of three rows of thick spruce trunks rammed deep into the ground, and which was removed only with great difficulty. Stretches of this kind 10 and 12 kilometers long were not unusual. The next stage usually following this was a very skillfully arranged line of defense works which was remarkable time after time for the fact that it had been constructed not by specialists but by civilians, and among them completely untrained women and children. This line normally consisted of tree trunk bunkers, forests whose trees had been cut down at about 1 meter height from the ground, wire obstacles, and supplementary concrete blocks. The latter had been poured at an industrial plant in regular pyramids about 1 meter high, so that they could be put together on the spot for practically any given purpose. The originality of many of the tree trunk bunkers mentioned consisted in the fact that the thick tree trunks used to protect the walls and roof were built into the bunker in an unusual way. This was so managed, namely, that the chopped off ends stuck out like the quills of a hedge-hog. In view of the Soviets' will to defend themselves to the last ditch and the old practice of the Slavic revolutionaries to tinker with explosives it can be taken for granted, of course, that these rows of continually recurring obstacles, as well as the spaces between, were planted with mines and tank traps.

In this way, therefore, there arose in one sector of 120 kilometers between the Luga River and the city of Leningrad a system of dozens of blockade lines of invisible field fortifications, menacing tree trunk observations, very cleverly chosen field positions, as well as immense wire obstacles, all of which represented a faithful copy of the Maginot defense system, but carried over to an eastern landscape and primitive, Eastern means. Since these fortifications could be constructed by civilian labor, by mobilized factory workers, who were yoked to the task, according to the custom of the Soviet Union, rapidly and in vast numbers, the actual troops needed only to occupy these positions and to hold them. Equipped with all possible means of cover against all but the heaviest of bombers and against 7.5-cm, and even 10-cm shells, and limited to a one-sided task, they did not have to be elite troops to be able to hold out successfully for a long time. And although for lack of regular reserves men from Leningrad's important war industries were immediately sent in at these points after being rushed into uniform, given little or no training, and supplied with rations for a week, these garrisons defended themselves with the best. A comparison with the defense of the Maginot Line by the French, which, in accordance with the possibilities of the more civilized western part of Europe, was fitted out with all the modern and special equipment to be had, would seem to indicate certain superiorities of the Leningrad system of defense. The number of the Soviet defense works in the vast forests and swamps, and their suitability to the terrain, made up for any advantage that the western European defense lines may have had in technical considerations; and the defensive fighting by the men of the two nations was decidedly different. The French as traditional soldiers, fought bravely but without that deep world-philosophical interest that has ever been alert in the peoples of the Soviet Union in opposition to National Socialism. The French usually surrendered after long fighting, when their intelligence comprehended that further defense was in vain and advised against useless bloodshed. The Bolsheviks and their troops do not usually surrender so quickly. The reason for this is primarily in the primitive nature of a people that is less accustomed to thinking. Still it can be presumed that they were afraid of mistreatment by the Germans, since the Russian troops were regularly given this prospect by their officers on orders from Stalin. It is also known that severe measures by the network of political commissars —which has been developed with extreme efficiency for decades— exercised a far-reaching influence. In any case, the loyal obstinacy of the soldiers in remaining in the fortifications usually resulted in great losses.

Now what were the Germans doing? Well aware that they had to deal with a people of great talent in constructing all kinds of earthworks and fortifications, and with a race that was closely bound to its native soil, the Germans made use of varied means to overcome them. Above all it was accomplished by the use of the most efficient forces of pioneers. The Germans avoided certain aggregations of ob-

stacles by not using the main road system—they advanced along poor roads or cut across country. Air forces were used relatively seldom in these positions. The training of the German Army in rapid and penetrating attack was proved by the deeds of individual young soldiers in such manner that in spite of the Bolshevik resistance the advancing soldiers removed mine after mine, so that the shock troops and panzers could move in. Often, up to this stage of combat, German tanks were left in fire positions before the obstacle, where they had been rolled forward as a kind of fast artillery. Since the Germans always attacked unexpectedly, with the aid of feint attacks and diversion maneuvers, and without regard for their own lives, they achieved important successes.

Crossing the Marne and Capture of Varennes by the 2d Bn, 35th Inf., 10-11 June 1940

["Ubergang über die Marne und Einnahme von Varennes am 10./11. 6. 1940 durch II./I.R. 35," appearing in *Militär Wochenblatt* (German) 13 June 1941. Condensed at the Command and General Staff School.]

In an editorial note, the Militär Wochenblatt itself points out that this article "deals with the action of an assault infantry battalion which had been held up by strong hostile resistance and that the commander of one of the rifle companies in this battalion, on his own initiative, moved his unit into the zone of an adjacent assault battalion and attacked the resistance from the rear, thus enabling his own battalion eventually to accomplish its assigned mission." The use of 75-mm and 150-mm weapons within the German infantry regiment will be noted, as will be the use of antitank guns on artillery missions, apparently believed practicable when there is no hostile tank threat. A 15-minute dive-bombing of the village appears to have supplemented an hour and a half artillery preparation.—THE EDITOR.

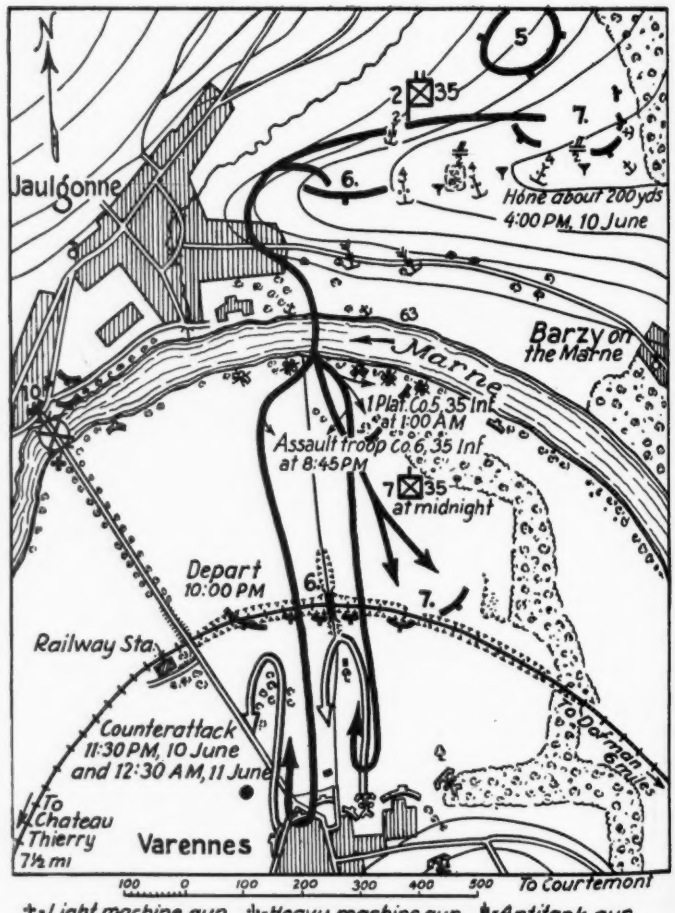
When certain elements of the 2d and 3d Battalions of the 35th Infantry arrived at a point on the front line on the Marne near Jaulgonne, it was too late, for the bridge had just been blown up. It was 10 June 1940. The troops had been rushed in trucks from the heights south of Ourcq. In attempting to gain a crossing near the destroyed bridge, the 10th Company became involved in stubborn combat which continued to evening.

Troops of the Ardennes region and colonial troops were meanwhile being cleaned out of Jaulgonne. Along the Marne valley road, a number of antitank weapons took up positions and engaged targets on the south bank of the river with high explosive shells, while Jaulgonne itself was being bombed by hostile airplanes.

The 2d Battalion occupied the heights just east of Jaulgonne from which a five-mile bend in the Marne could be observed. This steep-sloped hill about 475 feet high dominates the river bend at this point and the adjacent valley. The left flank was open.

The hostile, southern bank was strongly fortified; the enemy was installed in well-camouflaged field positions, connected by trenches. The banks on both sides of the river were covered with brush and they sloped, almost vertically, 6 to 8 feet down to the water's edge.

The 8th Company (machine-gun, 2d Bn) here experienced the most satisfactory close-range employment of its entire service on the West Front. This Company used its heavy mortars to chase the enemy from his prepared positions and then fired at him with its heavy machine guns. The


N
Jaulgonne
Marne
Barzy on the Marne
Hone about 200 yds 4:00 PM, 10 June
1 Plat. Co 5, 35 Inf at 1:00 AM
Assault troop Co 6, 35 Inf at 8:45 PM
at midnight
Depart 10:00 PM
Railway Sta.
Counterattack 11:30 PM, 10 June and 12:30 AM, 11 June
To Chateau Thierry 7½ mi
Varennes
To Courtemont
100 0 100 200 300 400 500

†-Light machine gun ‡-Heavy machine gun. ⊥-Antitank gun.
⊤-Light machine gun in position. ⊥-Antitank gun in position.
⊤-Heavy machine gun in position. ⊥-Infantry gun company.
⊤-Infantry gun company in position. ⊥-Heavy mortar
Collecting station for walking wounded.

SKETCH 1

battalion observation post was established on the high ground occupied by the 8th Company.

During the afternoon, the hostile fire from river positions continued to decrease until only intermittent machine-gun fire came from around Varennes and the woods east thereof. Fire from our own infantry accompanying guns and our artillery fell on Varennes; enemy artillery fire fell on Jaulgonne, especially on its northeastern exit.

We observed light hostile trucks continually moving reinforcements into Varennes from the west. These reinforcements were worth-while targets for our infantry, accompanying-gun (150-mm) platoon.

The battalion assistant adjutant at 3:10 PM returned from the regimental command post with orders to reconnoiter at once for battalion crossings. He also had information that an assault group was to be committed against Varennes later in the day to determine whether the village was occupied and if so, how strongly. If the hostile force in Varennes was weak, the village and the heights south of it were to be captured today by the 2d Battalion. In case Varennes was held in force, a bridgehead was to be established south of the Marne.

A crossing point was discovered near the eastern exit of Jaulgonne. The enemy continued to occupy a few of his river-bank positions. The 6th Company (see Sketch No. 1) with a reconnaissance detachment attached, was ordered to carry out detailed reconnaisance for this crossing.

Four small inflated rafts arrived at 5:35 PM. The machine-gun company remained in position on the heights northeast of Jaulgonne and elements of the 6th Company prepared to cover the crossing operations from positions near the north bank.

At 6:20 PM, the first pneumatic raft was lowered into the water and a sergeant with 4 riflemen and 2 light machine guns crossed over. Only a few enemy machine-gun nests opened fire. These were promptly silenced by our automatic weapons concealed along the north bank, and the nests were promptly cleared out by the men from the first two rafts. Raft after raft soon was crossing, and our troops were fanning out on the south bank on both sides of the crossing point.

The 2d Platoon of the 6th Company was across at 7:30 PM. More pneumatic rafts arrived and, about 8:00 PM, the 1st Platoon of the 6th Company and one heavy machine-gun platoon were across.

After receiving last-minute instructions from the company commander at 8:30 PM, the assault group deployed and started across the valley plain towards Varennes. It crossed the railroad track without encountering enemy resistance, and continued to the northern edge of the village. Here the enemy fired from all windows, attics and cellars, and his bullets whined out of gardens and trees. The right flank of the group became engaged in house to house combat. It was soon learned that Varennes was very strongly held. Darkness soon set in and the group withdrew to cover along the railroad embankment. The remaining platoon of the 6th Company, one antitank platoon and one heavy machine-gun squad were put across to reinforce the bridgehead along the railroad embankment. In accordance with regimental orders, the battalion commander remained on the north bank of the Marne until time of the assault.

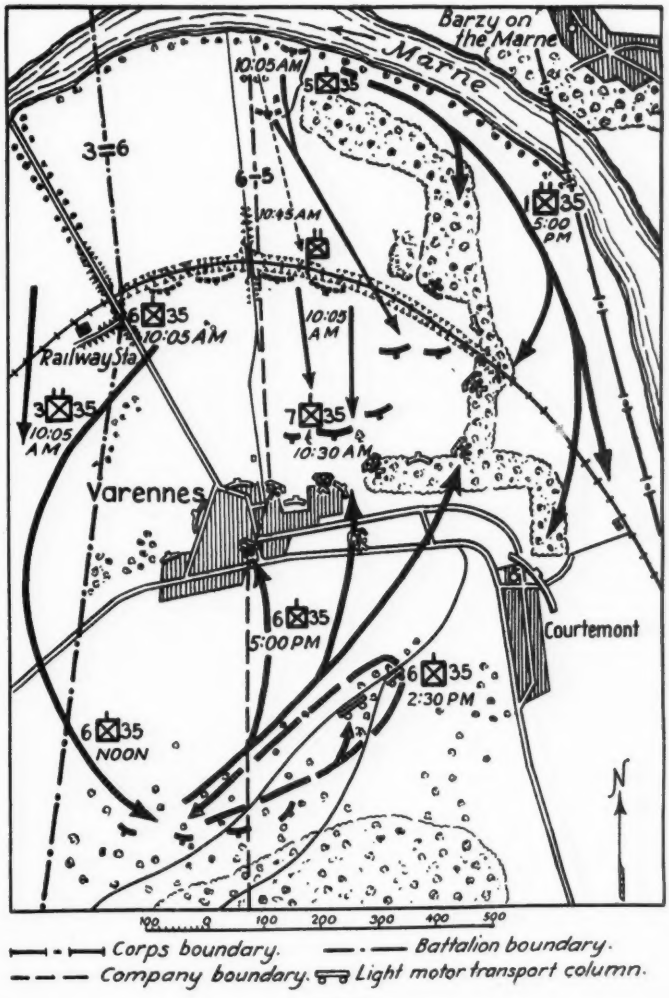
A hostile counterattack from Varennes was repulsed about 11:30 PM. Antitank guns were used in this section and some prisoners were brought in.

At the same time, the 7th Company with another heavy machine-gun squad as well as a platoon of the 5th Company crossed over and joined the 6th Company (see Sketch No. 1).

At 12:30 AM, the enemy made another unsuccessful counterattack. Reports from prisoners brought in during the night stated that Varennes as well as Courtemont and the intervening ground are strongly held by Chasseurs d'Ardennes and Zouaves, who were being reinforced continually. The enemy had become aware of our threat to his defenses and bombarded the crossing point.

During the night, the 6th Company furnished security from the railroad cut toward the front and right with a heavy machine-gun platoon. Likewise, the 7th Company, protected from the railroad cut toward the front and left. The boundary between the two companies was the railroad viaduct. The 1st Platoon, 5th Company, offered security towards the left rear. The 7th Company furnished protection along the Marne. One antitank gun was placed in position on the approach to the viaduct.

At 5:45 AM, the battalion adjutant was called to the regimental command post where he received the regimental order which designated Varennes and the heights south



SKETCH 2

thereof as the attack objectives; and that the 3d and 2d Battalions are to attack abreast, the 3d Battalion on the right.

Upon the return of his adjutant, the battalion commander issued orders to the attached light infantry-gun (75-mm) platoon to pay particular attention, during the attack of the 2d Battalion on Varennes, beginning at 10:05 AM, to targets appearing on the left flank which could not be taken under fire by artillery.

Presently, the battalion staff and the heavy mortar platoon of the 8th Company crossed over.

The company commanders were ordered to assemble at 8:45 AM at the battalion command post on the south bank of the Marne (see Sketch No. 2) where the battalion commander issued the following oral attack order:

"Battalion order for the attack upon Varennes and the heights south of it. Enemy is defending along the heights south of the Marne. Varennes and the heights south of it are strongly fortified. The 35th Infantry attacks with 3d Battalion on the right, with 2d Battalion on the left. Regimental attack objective: the heights 5 kilometers (about 3 miles) south of Varennes, just beyond those woods. Initial attack objective of this battailon: the heights just south of Varennes. Boundaries (see Sketch No. 2). The left flank is exposed because adjacent unit has not yet caught up. Attack begins at 10:05 AM. Artillery fire upon Varennes which began at 8:30 AM will increase to its highest rate starting at 9:35 AM. From 9:50 to 10:05 AM, dive-bombers will operate against Varennes and the region south of it. Battalion attack formation: 6th Company, right front; 7th Company, left front; 5th Company follows 200 yards in left rear of 7th Company and, above all, protects the left flank. One heavy machine-gun platoon remains attached to each assault company. Heavy machine guns from another infantry regiment give fire protection from heights north of the Marne. The attached light infantry-gun platoon, from position north of the Marne, fires upon targets of opportunity, above all, any enemy appearing on the left flank (already has individual order) and displaces forward after the battalion arrives at Varennes. Artillery liaison unit accompanies me. I'll follow the 7th Company. Next battalion command post yonder, in front, at the railroad embankment. Radio to 6th Company."

The company commanders gave their orders and organized their companies. Our own artillery fire increased steadily, being directed by artillery observation planes. The enemy artillery was shelling Jaulgonne, the heights east of it, the observation post of the attached infantry-gun platoon and the 1st Battalion command post (regimental reserve).

At 9:45 AM, the artillery fire reached its peak. Promptly at 9:50, the dive-bombers arrived and unloaded. Varennes disappeared in smoke and dust.

At 10:05 AM, the battalion opened its attack. At first only the 6th Company received machine-gun fire from Varennes. Targets could not be distinguished. Everything was still enveloped in smoke. After a brief halt, the commander of the 6th Company noticed that the 3d Battalion (on the right) was advancing unhindered. He decided to bear over to the right into the zone of this battalion and detour around Varennes (see Sketch No. 2).

The smoke and haze vanished. Suddenly, hell broke loose in the 7th Company's zone of action. Deadly hostile defensive fire came from all directions. The 5th and 7th Companies were pinned to the ground in their zone of action on the flat open terrain, which was covered with clover and grain up to 20 centimeters or about 8 inches high. The northern edge of Varennes and the edges of the woods to the east and northeast of it were strongly occupied.

The battalion commander could find no trace of the 6th Company. The radio group ordered to advance with this company did not answer. Reconnaissance patrols and messengers sent to the 6th Company did not return. Regimental contact was also broken at that time. Towards 11:00 AM, the following written message was sent to the regimental command post:

"Battalion advance held up by strong hostile flanking movement from the woods northeast of Varennes. No contact with 6th Company. Request employment of 1st Battalion to relieve left flank."

A duplicate of this message was dispatched at 11:15 AM, because it was doubtful whether the messenger could cross the open terrain in the valley.

About 12:00 noon, the regimental telephone detail arrived at the railroad embankment. But immediately afterwards, connection was broken by hostile artillery fire on the points where the telephone lines crossed the tracks.

The 7th Company first moved its left and center platoons to the right in order to break contact with the enemy and then to move ahead on its right.

The portable radio apparatus remaining with the battalion for contact with the 6th Company finally succeeded after a long effort, in getting contact with regiment about 2:10 PM.

Commitment of the 1st Battalion on the left was announced by the regiment.

About 3:30 PM, the following written message came in to the 2d Battalion command post from the 6th Company: "Time sent: 12:10 PM. 6th Company reached first attack objective at 12:00 noon. No contact with 7th Company."

The messenger reported that in contrast to the situation in the forenoon, the western edge of Varennes and the group of trees west of it are now strongly occupied. Because of this, it took him more than 3 hours to bring the message.

On his return this messenger carried the following written order to the 6th Company: "Leave security groups behind and move south around Varennes and tackle the enemy from the rear." A battalion messenger accompanied the 6th Company messenger.

Meanwhile, the reconnaissance patrols of the 6th Company, which had been sent out to contact the 7th Company, observed an enemy motor column halted in a sunken road south of Varennes. By 3:30 PM, this column had been put out of action. (See Sketch 2.)

At 4:45 PM, the 6th Company went into position on the heights south of Varennes. To carry out his mission, the company commander had formed three assault groups. (See Sketch 2.)

Beginning at 5:00 PM, the noise of a fire fight was heard from an easterly direction at the battalion command post. The 1st Battalion moved into the woods east of Varennes from the east. The machine-gun fire from the left rear ceased. The 6th Company assault groups were doing their work. The detonations of hand grenades and the shouts of

an assault were heard at 5:30 PM, coming from Varennes and at 5:45 PM, from the woods east thereof.

Hostile resistance decreased in front of the 7th Company and it advanced into the woods. The enemy was surrounded. The 6th and 7th Companies broke the last resistance in close range fighting. However, the central and western parts of Varennes were still occupied. The 5th Company was ordered to mop up the village. After fierce hand-to-hand combat, some 600 prisoners, mostly black, were captured.

Meanwhile the battalion reorganized and renewed the advance without meeting much resistance. About 10:00 PM, the battalion commander reported to the regiment orally by radio: "The day's objective has been reached."

The Food of the Soldier

["Zur Verpflegung des Soldaten," by Pieszcek. *Militär-Wochenblatt*, 30 May 1941. Translated from the German at the Command and General Staff School, Fort Leavenworth, Kansas.]

In this war, the question of rations and their preparation, has taken precedence, as a consideration, over the movement of supplies to the front, in spite of the great importance of the latter.

In the first place, the number of different foods provided for the soldier has more than doubled since the World War. There are now 138. Among determining factors were the scientific discoveries in dietetics.

The commission of scientists demands less meat, more vegetable albuminous substances, in about the proportion of 2 to 3 or 2 to 4. It advises greater use of potatoes, vegetables, fruits and cheese with regularity; also canned or fresh fish, as well as liver, kidneys, etc., and a darker bread. Above all, this commission regards the vitamin content as insufficient and considers the enriching of rations with vitamins as a matter of urgent importance in order that the health and, at the same time, the spirit of the men may be maintained at proper level.

The German army is giving its soldiers the following:

A sufficient amount of meat, and in addition mushroom powder (Bratlingspulver) which contains milk, soy-bean and vegetable albumin; 30 grams of soy-bean albumin per week; canned liver and blood sausage; cheese and canned fish one or twice a week; fresh potatoes nine times, dried vegetables twice, roast vegetables, fresh cabbage, sauerkraut, pickled vegetables, dried potatoes and canned vegetables once each month.

The distribution of these is governed by the military, the supply and transportation situations. If it is possible in certain sections to obtain more potatoes and fresh vegetables, it is a duty to use them.

Soldiers are also supplied with fresh and dried fruits. At present, during a month they receive 250 grams of orange six times, containing at least 50 miligrams of Vitamin C each time.

Pudding in powder form is given a soldier once a week, with condensed skimmed milk and, occasionally, a ready-cooked powder which contains the dried skimmed milk.

Yeast extract containing Vitamin B and Vitamin C in tablet form are issued.

Grape sugar is supplied in certain foods.

Beyond this, the German Army Command is arranging to obtain 25,000 tons of frozen fish filets, cod liver and other fish products, and 20,000 tons of frozen, preserved fruits and vegetables. It intends further to improve the vitamin content and taste of dried fruits and vegetables.

Very promising results have attended experiments in preparing natural concentrates of Vitamin C, through extracts, so that, at least to a certain extent, natural Vitamin C will eventually replace the artificially produced ascorbic acid (Vitamin C).

Lastly, they plan to issue more yeast.

Discipline

[From an article by Section Leader F. E. Heron, in *An Cosantóir* (Ireland), 21 February 1941.]

We don't always realize that discipline is good for us and really necessary in some form or other for most of us, but we frequently resent it as it usually means doing something which we would find it easier not to do. In other words, taking the line of least resistance rather than the energetic and determined course. It might be likened to getting up in the morning in good time. It's easier to stay put but once the effort is made we feel all the better for it physically and morally.

An outstanding example of the need of discipline can be seen in the spoiled child—spoiled for lack of this thing of which we are all a little shy and apt to escape if we can. The undisciplined child is a worry, but unpleasant as he is to outsiders, as he grows to manhood he is his worst enemy—he feels every man is against him, every job, if he manages to hold one, is a drudgery simply because he has had no practice in submitting to discipline or obeying orders. Life itself is the greatest of disciplinarians and will hit hard he who has not been subject to it during the formative period.

We have all been subject to some form of discipline in the varying degrees through the cradle, school, workshop, office; but we are inclined to put military discipline in a different category and to dread such rule. Naturally, it is in a measure severe but it must be recognized as fundamental that any large body of armed men (or unarmed for that matter) must be subject to the strictness of discipline, especially in prompt obedience, or such body could not be dignified by the title of Army.

The immediate strict control by superiors, in a chain leading from the noncommissioned officers upwards is not only necessary for smooth working in normal times, but as a constant preparation for the time of strife; for it is in battle the full effect and value of discipline becomes manifest. It embodies something more than obedience—esprit de corps or comradeship and pride in one's unit which all makes for the good and courageous soldier and general morale.

It may seem to some of us that all the foot and rifle drill we do is rather unnecessary; that if you have a gun in your hand and can use it this should make you a soldier or as much

of one as you wish to be in an emergency volunteer force. Such ideas are entirely wrong—actually with the limited time available we can never do sufficient ordinary drill. The regular soldier continues to drill throughout his period of soldiering, no matter how long that may be and this is all part and parcel of his training; every time he goes on parade, the parade is in drill form. One effect is to make man and rifle (a soldier's best friend) almost one. All this tells in making for the smart alert soldier and the well disciplined and therefore first-class or crack regiment. Discipline is reflected in the turn-out be it for a ceremonial parade, an ordinary working march, or in the individual bearing and smartness of the soldier off duty.

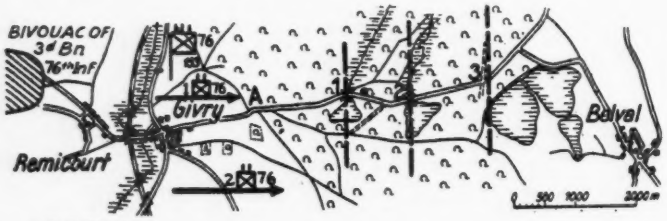
I had the experience of serving for some years as a private soldier with various units in all of which the discipline was of a high standard. I don't think anyone who was worthy of the name soldier ever resented the severity, because it meant he was a member of a high standing and respected corps in which he took a real pride. The discipline maintained by officers in relation to their superiors was if anything sterner but one felt the better for it.

Remember one man can spoil a battalion.

Report on the Battle Near Givry-en-Argonne, 14 June 1940

["Bericht über das Gefecht bei Givry-en-Argonne am 14.6.1940," by Lieutenant Reichstein. *Militär-Wochenblatt*, 27 June, 1941. Condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

It is June 14, 1940, and the 76th Infantry is moving on the same roads in the Argonne over which the Germans passed in 1916. The 1st and 2nd Battalions of the 76th Infantry have taken the edge of the woods just east of Givry. Company 11 of the 3d Battalion, with a storm battery, is to furnish the point for the attack, its mission being to thrust forward along the road to the other side of the woods between Givry and Belval.



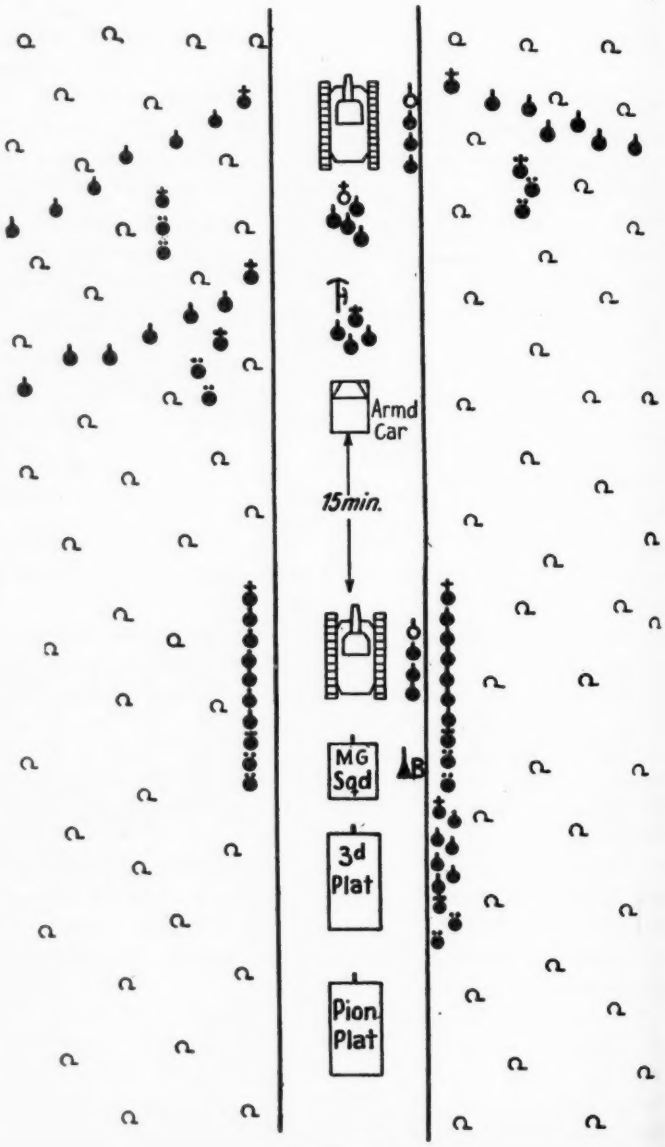
SKETCH 1

The 1st and 2d Battalions will follow this forward thrust along the road, one to the right and the other to the left of it. There is first a careful discussion with the leaders of the units detailed; and then the company advances in compact formation to the edge of the woods east of Givry, where it then draws up as follows:

The first platoon is the point. There is one squad to the right and one to the left, with one group behind the assault gun; after that comes the company troop, followed by a pioneer reconnaissance troop. Fifteen minutes later comes the second platoon with a similar formation, and with it the second assault gun, the pioneer platoon, the artillery observer and the rest of the company.

The company leader makes a brief sketch of the creditable mission with which the company has been charged. There should not be so many bullets hurled at the enemy, rather as many grenades as possible. Bayonets should be fixed, and there should be much shouting, at least there where they resist our attack at all.

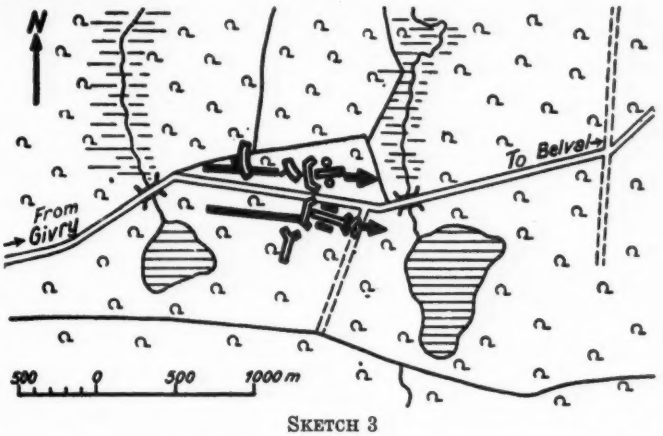
With that we proceed. First of all the point advances as a body in march time. Some four hundred yards in front



SKETCH 2

of our first objective—the creek bottom at the level of the first lake—the assault gun suddenly stops. There is a short parley between the company leader and the leader of the assault gun, and then the very first shot crashes on the enemy objective, which has been recognized: some French riflemen, probably a barricade. The assault gun now sends some more 75s in very quick order into the trees and foliage above the enemy objective. The enemy is blown up. And now we advance again, but in a tempo that grows gradually slower. Ever and again the fire of newly approaching enemy units rings forth. We are but rarely able to make out the enemy, our objective. The squads to the right and left of the assault guns have left the road by now, and constitute a curtain about the assault gun to protect it from surprise. Some hundreds of yards in front of the first objective of our attack, the enemy suddenly makes an appearance. The Pfeiffer squad of the 1st Platoon is detailed to them. Hardly two minutes later comes the cry: "Noncommissioned officer Pfeiffer wounded!" He has received a bullet in the head; he dies of it some hours later in the first aid station. The enemy to our left falls back; three Frenchmen are taken prisoners. The point again advances. The assault gun grows silent, being unable to recognize any enemy objectives; and instead of its firing, the assault gun is taken under fire. At first we think it to be a tank cannon; but then we recognize by the impacts that it is an enemy antitank gun that is firing shot after shot in rapid succession into the assault gun's armor. The impacts are not dangerous; the distance is so great that the shells are unable to pierce the armor. We advance a little farther. Suddenly some hand grenades detonate on the road, about where the assault gun is. The hand grenade throwers are taken prisoner, and are led to the rear together with the other prisoners. And thus the company reaches the first objective of its attack. The regimental adjutant, who shortly before this had come up with us, takes a report of it back with him.

And now the attack becomes ever more difficult. The company has no contact left or right of it. The nearer we come to the enemy, the more effective become the numerous shots of the enemy antitank gun. True, we do succeed in ascertaining the whereabouts of the enemy antitank position, but we are unable to make out whether it is in the left or right ditch along the road. Machine-gun and rifle fire continue to come at us from changing directions, resulting in further casualties. The chief of the assault gun announces that he cannot approach any closer to the enemy, without most certainly having his armor pierced. After a lengthy consultation, and a short parley with the battalion commander who had hurried forward to us, the company leader decides to send the 2d Platoon to the right and the 1st Platoon to the left of the road, and to take the antitank position and the machine guns around it. The assault gun is meanwhile to make another attempt, but the assault will go forward regardless of the gun's effectiveness. The assault gun moves on with a clank. Some grenades explode in the vicinity of the enemy position. But again antitank shells come to strike the assault gun and it has to retreat, in order not to be shot to pieces. The company continues. All the enemy nests are being stubbornly defended; frequently they let us approach quite close, so that we again sustain some casualties. But we manage, with hand grenades, light machine guns and rifles, to drive the enemy from some of the nests, and thus reach the enemy antitank position. The position is taken by the 2d Platoon.



SKETCH 3

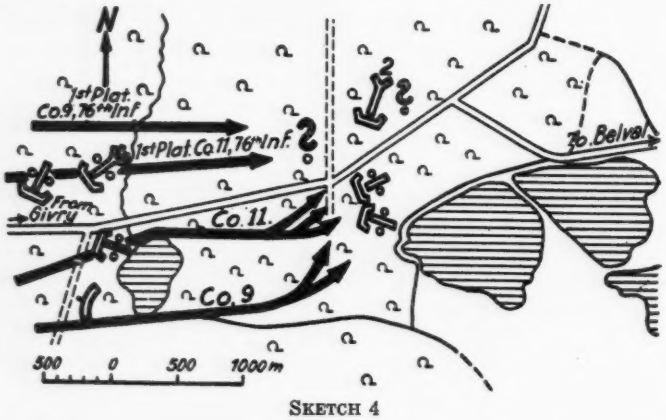
The report that the antitank position has been taken is sent to the battalion and to the assault gun; it has been agreed that the assault gun is to follow as soon as this happens. Some hundred yards farther on, the company again stumbles on enemy nests. They are lying some 20 or 30 yards deep in the woods, so that they can work on the road as well as on the woods, at least at close range. The nests have been laid out with extreme cleverness. The company prepares to take these nests too.

An observer from the 2d Platoon reports that he has the exact position of a nest. The company leader and the leader of the 2d Platoon go off to the right with the observer to reconnoiter, and to take this nest which has now been holding us for some time. The reconnoitering party goes very far, and suddenly the three find that they have reached the second objective of attack. And now it is a question of getting back to the company, for there are still some of the enemy in their rear, a fact easily recognizable by the light machine gun and rifle fire ringing out with varying intensity. After reaching the road, the three go back into the woods some two hundred meters, and then proceed to make an attempt to establish contact with the company by shouting. The shouting is not indeed without its effect, though the effect is different from the one expected. Instead of the company's answer, there are heard at a distance of some 20 or 30 yards left and right of the road, half-shouted French commands, followed in practically the same moment by a heavy volley of fire. After our first movement of terror, we find that we have at least discovered the strength and position of the enemy, who apparently has been withdrawing in the interlude. The French have gone into position to the left of the road with a half of a heavy machine-gun platoon and one light machine-gun; to the right of the road there seems to be only one light machine-gun nest. And now the 2d Platoon observer, the enemy fire having subsided, is sent back with mission to bring the company up at once. The company has been missing the company leader. The company troop leader has kept the company together, so that it is not long in coming. All attempts to come up with the nests prove unsuccessful in the dense undergrowth. Suddenly there is an excited shout that the enemy's movements point to a counter-thrust. The heavy machine gun is soon brought up and ordered to assume a position on the road in such manner as to be able above all to suppress the enemy machine gun to the left of the road; for this machine gun has been holding up the 1st

Platoon. The lay of the fire is excellent, with the result that the Ziegenbein reconnaissance troop succeeds in taking a light machine-gun nest with hand grenades. But despite this effort, the enemy fire increases rather than decreases its effectiveness. All attempts by Officers Schuldt and Abraham to reach the enemy nest remain unsuccessful. Creeping along through the underbrush, they manage to approach to within ten meters of the nest; and then have to make their way back. It is out of the question here to achieve anything with hand grenades; before they can reach the enemy, they die in some bush or other.

The company must remain lying there, despite all its efforts. Bullets fly through the woods, coming from all directions. Under such circumstances there cannot possibly be any advance.

And so the Graeber Squad from the 2d Platoon is given the mission of making off to the right and taking the nest from the rear. This venture comes to naught because of the riflemen that the enemy has planted in trees. The 3d Platoon is called on now, and detailed to proceed toward the lake which is the second objective of our attack; they are to make their way to the road at that point. This mission is checked at the outset, for right after the order has been given, the battalion commander arrives. The company leader demonstrates, and the commandant himself recognizes, that any further attack can be successful only on condition that additional battalion detachments be used to extend the two flanks. So now the bulk of the 9th Company is sent to the right of the 11th Company, while one platoon from the 9th Company is sent to the left of the 11th Company. The battalion commander now gives the order to push forward in this formation to at least the second objective of our attack, and if possible to the other edge of the woods. The formation is quickly assumed as ordered.



SKETCH 4

The 3d Platoon is now the one farthest forward. Once begun, the advance is rapid. Many hundreds of yards are covered in the teeth of the enemy fire, without regard for that fire or for the casualties it produces. Anyone that falls, anybody that gets wounded, is left lying there. At the second objective, the lake, the 9th Company veers right and the 11th Company left. Because of the massed troops left of the lake, the 3d Platoon of the 11th Company and the bulk of the 2d Platoon carry their assault, once on the other side of the lake, more to the right, in order thus to thrust on by the enemy position to the right of the road and reestablish contact with the 9th Company. The squads keep a close formation; still, the 2d and 3d Platoons are no longer clearly distinguishable. There are some of their elements in the 9th Company's left wing too. Some men from the 2d Platoon and from the company troop push forward to the road on the left, in order not to let contact with the 1st Platoon, which is advancing to the left of the road, be broken. The 1st Platoon and the one platoon from the 9th Company are still hanging way back, with their left wing bent sharply to the rear. The assault is first brought to a stop at the point where the road and the forest path cross. Just as the six or seven soldiers charging at that point come out of the woods onto the path, they are struck by enemy fire coming from 25 or 30 yards away, so strong that they have to throw themselves on the ground. A corporal and I lie behind a tree. As if by a miracle we remained unwounded. There are several heavy and light machine guns over there. When the fire abates there is no sign of the enemy to be seen; he is back again in the edge of the woods on the other side. The company leader's shouts of "Tanks to the fore" and "Right, charge farther ahead" have this only result, that fresh and well-directed heavy enemy fire coming from the old direction, makes all movement impossible. After a few minutes we finally hear over to our right the 9th Company still hurrahing, charging on across the path. The enemy along the road recognizes the danger that this creates for him and seeks to withdraw. Rifle and pistol fire inflict some losses on the fleeing enemy. Some elements withdraw to the left across the road in front of the 1st Platoon, which has not yet reached the road. The soldiers lying by the crossing—there are only three of them now, with one more man lying some 15 yards farther to the right—again charge forward hurrahing and reach the other edge of the woods. There we receive appreciable enemy fire out of the old firing positions, and this forces us back to the ground. One man falls, and another is wounded. The two remaining have swerved farther to the right. The enemy fire is coming from a distance of 15 yards but the exact spot is not to be identified. Shortly after this, the 2d and 3d Platoons, charging rapidly forward, push on across the path and into the gap between the 9th Company over on the right and the soldiers lying by the intersection. Their charge comes to a halt a little way beyond the other edge of the woods, in the midst of the same enemy fire that has kept the company leader nailed to the crossing. Their losses are heavy.

And now cries from the rear can be heard, such as, "Halt!" and "Stop the charge!" There are still enemy elements to the left and rear, facing the 1st Platoon, and also facing the 11th Company, elements that cannot be eliminated at once. The company leader consequently orders: "3d battalion, cease charge!"

The regimental ordnance officer appears from the right rear and shouts out the order to stop the charge to the company leader. He has been running after the charging company for a long time, but has not been able to bring the attack to a stop. Because of the heavy enemy fire, he creeps up to the company leader along one of the little ditches at the edge of the woods. The battalion commander follows him in the same fashion and confirms the order to stop the charge.

After a brief parley with the battalion commander, the company leader gives the leader of the 1st Platoon, who had come up shortly before, the order not to cross the path with the mass of the troops, but to take over the security and send out reconnaissance troops. The enemy has meanwhile fled.

The heavy machine-gun group is detailed to guard the intersection. The company leader betakes himself to the leader of the 2d Platoon, who has sent one of his group leaders with a request for him to do so. The battalion commander now promises speedy security by the 10th Company, as well as medical care, so that the 11th Company will find itself in a position to reform its ranks and make itself ready for fresh fighting, and to take care of its dead and wounded, as well as its arms and equipment.

The 10th Company is quick to arrive, so that after a short consultation between the leaders of the 9th Company, the 10th Company, the Pioneer Platoon and the assault battery, the relief by the 10th Company can be executed. The leader of the 1st Platoon is charged with the execution of it in the case of the 11th Company. The company leader now goes by motorcycle to the battalion, then to the regiment, the first-aid station and the motor vehicles to obtain the aid of some trucks. The battalion is ordered to the vehicles, as soon as its relief in the form of another battalion is at hand. It is now close to midnight.

At dawn, the fallen are buried and toward noon the battalion marches off toward Langres.

Suggestions for Unit Training

[Condensed from an article by Major M. P. Huthwaite, in the *Journal of the Royal United Service Institution* (Great Britain), May, 1941.]

While this is an excellent and practical article on training, attention is called to the defeatist attitude of the author when speaking about Physical Fitness he takes as an example, I quote: "We want to be able to march 25 miles with equipment and then withstand an attack." Again in choosing one of four tactical problems to consider in detail, the one on "Company in Defense" is selected, although one of them listed was "Company in Attack." General Pershing had this same thing to overcome when he arrived in France due to the defeatist attitude of the Allies and he immediately instilled the offensive spirit into the A.E.F. It must be remembered that no nation won a war by defending.—THE EDITOR.

Training is the major consideration of the army at home at present. We all realize that in the German army we have a formidable foe, and that we must use every moment of the time allowed us to bring ourselves up to a satisfactory standard of technical efficiency.

We know it because we realize that, in spite of the apparent change in conditions which the introduction of complicated material has brought to war, the spirit of the individual soldier is still a deciding factor. Because of this we shall win the war on land just as we are winning it on sea and in the air. But how many lives will it cost?

The answer lies in the efficiency or otherwise of the training which we carry out now. The success attained in our training will finally be measured in the size of our casualty lists. The realization of this is an incentive which must inevitably drive us to make every effort.

Let us then consider how we may overcome the difficulties which invariably arise so that we can train up to the maximum effect, get quick results, and ensure that when we finally go into battle every man will play his part to help us achieve the victory which we must, and which we shall, obtain.

An officer who is given command of a newly formed unit will find it of value to make a list of the various things which he will have to instill into his officers and men before the battalion can take its place in the field with the comforting knowledge that it contains not one weak link. Such a list might well be as follows:

1. Intelligent discipline.
2. Power of leadership.
3. A high standard of physical fitness.
4. Sound common sense administration.
5. Individual proficiency in weapon training, etc.
6. Tactical knowledge.

Discipline.—No one in the army will question the value of good discipline. The first thing, then, is to make sure that every man in the unit understands the *need* for discipline and the *value* of it, for the men are quite intelligent enough to understand. If we explain discipline to them, not only on the day they join when it is liable to go in one ear and out of the other, but at regular intervals, it will be found that instead of chafing against it the majority will do their best to attain a high standard.

Good discipline should then be based on three things:

Explanation to the men
Good drill on all occasions
High standards of cleanliness in personal turn-out and accommodation.

Power of Leadership.—It has been said that a leader is born and cannot be made, but this is a misleading statement. Most officers, and a great proportion of men, can become good leaders if they try hard enough. The principles by which this ability to lead may be instilled is very simple. Every officer should:

(1) Be proficient at his job.
(2) Take a very real interest in the men under his command.

Once the officer looks after his men, the men will look after their officer and the task of command becomes much simpler.

(3) Set a high standard of self-discipline, fitness and turn-out.

We have considered leadership by the officers; but what of the noncommissioned officers? The answer is simple. Good officers will produce good NCOs, just as good officers and NCOs will produce good men.

Physical fitness.—There is no need to dwell on the need for this; it is obvious. We all realize too that fitness in a

military sense is different from normal fitness. In war we want something in reserve. We want to be able to march 25 miles with equipment and then withstand an attack; finally to be able to counterattack.

Let us see that our officers and NCOs inspire men by the example they set. We do not want battalions which are known as being "sociable" and which "throw good parties," but battalions which are known as being tough. The great point to stress is that once again the officers must lead the men.

Good administration.—Good administration is not an end in itself. It is designed to keep the men fit, well fed, well clothed and contented, so that they may gain in spirit and efficiency for the real business of fighting.

Individual Proficiency.—Every man must be good at his job; he must be skilled in the use of his weapons.

The secret of quick success in this respect is the maintenance of interest. The program of work should be very carefully planned so as to alternate active periods with static ones.

We should try to let the men see the final object of training as easily as possible. If, for example, the men are allowed to fire a burst from the light machine gun at an early stage, they will study and learn its mechanism with double the interest. And again we want active participation from the officers, and a sense of competition.

Tactical knowledge.—The ideal way to produce officers and NCOs with sound tactical knowledge is to instill the principles into them. This, however, takes a long time, and during the lengthy period when the principles are imperfectly understood the young officer or NCO faced with a problem tends to be very slow in coming to a decision. The Germans say in "Truppenführung," their equivalent to our Field Service Regulations:

> "Better a faulty plan which shows boldness and decision than a perfect plan enmeshed in uncertainty." And again, "Initiative is essential, mistakes and even disobedience are better than inertia."

There is a lot of good sense in both these quotations. In war today, we must think and act quickly.

In the opinion of the writer an excellent way of getting a unit tactically trained in a short time is by the use of Battle Drill. What we do is to—

(a) Produce a book solution answer to each tactical problem which may arise, e. g.—

Platoon mopping up a road block
Company in attack
Company in defense
Company clearing a village, etc.

Let us consider the question of teaching "Company in Defense" by this method. Our Battle Drill solution would lay down:

(i) Two platoons up, one in reserve.
(ii) Platoon areas to have all round defense.
(iii) Reserve platoon to cover the flanks of the forward platoons.
(iv) Priority of defense work to be so and so.
(v) Each company and platoon headquarters to be responsible for getting in touch with the troops on the left.
(vi) Details resiting of light machine guns.
(vii) Tasks for mortar, etc.

(b) Explain the solution on a suitable piece of ground.

(c) Carry out the occupation of the position on the selected ground as a drill.

(d) Repeat the occupation on the same ground, till it is perfect.

(e) Carry out the same plan of occupation on several different pieces of ground.

Once a battalion or a company has gone through this procedure it will be found that it can occupy a position and prepare it for defense very quickly indeed.

The point is that it is easier for all concerned to act quickly in carrying out a procedure they know will than it will be for them to think of tactical principles and then spend precious time in orders and explanations to put them into practice. Let us make sure then that, as a basis for tactics, our junior officers and NCOs have firmly fixed in their minds the lessons of a Battle Drill for each tactical problem which they might be called upon to solve. Then, if we have time, we can elaborate our study of principles as opposed to examples.

One last thing to remember is the value of having an "enemy." During training the value of an enemy is immense in teaching men to think and act quickly, and in maintaining interest. If possible, one company should train in defense, while another does so in attack, against them. The action of carriers in meeting a road block should be combined with exercising a platoon in establishing and holding a block. Neither side should be too strictly controlled but each commander encouraged to use his wits to beat the enemy. Umpires are of course necessary, but these can be borrowed from other companies or platoons not taking part. Their role should be confined to painting the picture and preventing a real battle breaking out; it is for the officer running the exercise to hold the discussion and bring out the lessons which have been learned.

We have now considered in some detail all our original headings. If we are to achieve the success that we want in our training, the commanding officer must plan it very carefully, and then explain his plans to his officers and NCOs so that he gets their enthusiastic cooperation. In the early stages of training particularly, it is essential to remember the value of decentralization and delegation of responsibility and the necessity for insuring that we do not leave any men untrained, for these will prove a weak link in the unit. If possible we should try to arrange for every man in the company to be available for training with that company at regular intervals.

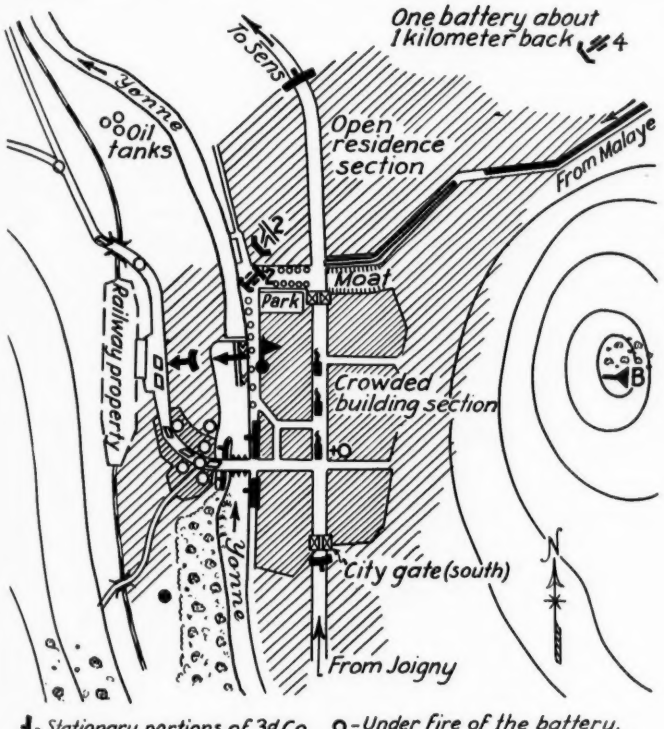
In any case this paper does not presume to say exactly what should be done, but only to discuss some of the matters which affect a commanding officer with a battalion to train. If it does nothing more than suggest a line of thought to follow it will have succeeded in its object.

Battle for the Bridge at Villeneuve-sur-Yonne and Formation of a Bridgehead

["Der Kampf um die Brücke bei Villeneuve-sur-Yonne und Bildung eines Brückenkopfes," by Lieutenant Künzel, in *Militär-Wochenblatt*, 25 July 1941. Translated and condensed from the German at the Command and General Staff School, Fort Leavenworth, Kansas.]

After the Weygand line south of Amiens had been broken through and Paris had fallen, our division was engaged in the pursuit and annihilation of the enemy, passing by Paris on the north and heading in a generally southern direction toward Vichy by way of Villiers-Cotterets, Provins, Sens, Varzy, Nevers, and Moulins. The Seine had been crossed without a fight near Nogent-sur-Seine, on the morning of 15 June. The two reinforced infantry regiments of the division pushed on to the south in two groups, with the mission to take the bridges across the Yonne between Joigny and Sens.

Our regiment (the 10th Infantry) was given the assignment to take care of the southern bridges. The 1st Battalion, acting as a point, reached Malaye, about 6 miles



east of Sens, early in the afternoon. The small bridge in Malaye was seized without a struggle. The enemy had left only supplies, equipment and horses behind in this place. The battalion remained in Malaye for the time being and secured itself on the south. Later in the afternoon, however, the battalion received orders from the regimental command about as follows: "The enemy has taken a position on the Yonne, and is in possession of the bridges. In Sens, parts of the division have encountered stronger hostile forces, defending themselves stubbornly. The 1st Battalion pushes forward to Villeneuve-sur-Yonne and takes possession of the bridge there.

The battalion was shortly under way. The 3d Company, reinforced with heavy weapons, went ahead as point company. The route led the way of a narrow road over the top of a densely wooded ridge, then southward and through a broad depression which ended at Villeneuve in the valley of the Yonne.

The Yonne flows through a hilly terrain. Dense woods crown the hills which are about 900 feet high. The valleys are mostly cultivated fields. Villeneuve, a city of some 5,000 inhabitants, has the characteristics of a city of the middle ages, surrounded by a wall, still partly intact. There are still huge watch towers with narrow gates at the city entrances. Narrow streets branch off each side of the broad main street of the city, parallel to the Yonne. There is a dam across the Yonne at Villeneuve, where the river is about 150 yards wide. A broad street runs along the east bank of the river. Here is the newer section of the city including the railway station, warehouses, a few dwellings and, down the river, a few oil storage tanks. An arched, stone bridge near the center of the city, connects the two sections separated by the river. It was important to take this ancient, arched, stone bridge, about 200 yards long and about 13 feet wide, in as good a condition as possible, and form a bridgehead on the far side to insure the continued advance of our forces.

The greatly coveted bridge, provided on both sides with broad, strong stone parapets, rests on several stone pilings. The center one was on a small, narrow island on which several trees had also taken root. This little island, directly under the highest part of the strongly arched bridge, was to be the salvation of the first troops to attack the bridge during the battle.

The 3d Company advanced, therefore, on Villeneuve, as the battalion's point company, with the 1st Platoon two minutes ahead, as point platoon. Following the company were the battalion commander, an artillery reconnaissance unit and the main body of the battalion, separated by a small interval.

As the company drew near Villeneuve, the city was reported clear of the enemy. The machine guns were put into firing position on the motor vehicles for security in all directions. When the point platoon had advanced about 400 yards into the city, it ran unexpectedly onto a heavy, 30-ton, hostile tank, which came out of a side street leading to the bridge. The tank crew was apparently as surprised as our men, for at first they opened fire with machine gun only. In contrast with the slow rate of fire of

the machine guns of the French infantry, the tank's machine-gun fire was rapid. It sounded like one of our own guns. Drivers of our motor vehicles, which were following, believed at first that the point was engaged in a street fight which had been started from one of the vehicles.

The crew of the first of our vehicles returned the fire of the tank but, just as the crew of the next following car, was obliged to take shelter in the houses for our machine guns were ineffective against heavy tanks.

The drivers tried to turn their vehicles around, but in the majority of cases this proved impossible on account of the narrowness of the street.

The tank now began firing with its cannon. It set fire to three of the cars, which were completely destroyed. The two antitank guns assigned to the company were hurriedly brought up. The first one bravely opened fire alongside the burning cars. Hereupon, the tank turned around, retreated a short distance and turned into the side street leading to the bridge.

A second heavy, hostile tank stopped on the bridge. The second antitank gun turned off to the right of the main street, and went into position about 250 yards downstream from the bridge. It fired at the tanks standing on the bridge, but whose chassis were completely protected by the bridge's stone rail. The tanks now drove back to the far side of the river being warded off by the good hits scored by our antitank gun, where they were still in good range of our antitank gun. Our shock troop took advantage of this opportunity to rush behind the retreating tanks to a point past the center of the bridge, where, however, there was a barricade.

The shock troop took shelter behind this. With special ammunition it fired upon the tanks while the remainder of the platoon and one additional platoon went into position on the bank and provided security.

The tanks replied to the fire with their machine guns and poured a lively fire into the barricade with their cannons. The shock troop at the barricade climbed over the rail of the bridge and descended one of the columns of the bridge to the island which was directly under that part of the bridge and the barricade. Reinforcements were ferried across to the shock troop in a boat, brought from the island by one of the sergeants.

Infantry guns and heavy trench mortars now began firing from open positions on the east bank of the river and later on (in the forming of the bridgehead) the supporting battery fired from the other side. The houses near the bridge which had served as cover for the tanks were caught in the heavy fire, so that the tanks did not dare to venture onto the bridge any longer, but they did, however, still keep in under their fire. Three hundred yards down-stream, the 2d Platoon made the crossing in two boats and advanced toward the railroad station in rear of the tanks.

While the 2d Platoon became engaged with some hostile motorcycle troops in the vicinity of the station, who escaped in spite of the fact that fire was immediately opened on them, the hostile tanks now retreated farther to the rear. The bridgehead was formed.

The sound of motors which could be heard coming from across the city, indicated that there were probably other hostile tanks there. Eight heavy, French tanks escaped in rapid flight toward the west.

By 10:00 PM, the bridgehead had been extended to a distance of about one-half mile. Our mission, to take the bridge at Villeneuve intact, was accomplished.

Overcoming Artificial Barriers

[An article by Major M. Sochilov, in *Krasnaya Zvyezda* (Russia), 17 December 1940. Translated from the Russian in the Translation Section, Army War College, Washington, D. C.]

The number of roads and paths that may be utilized by advancing forces in forest and marshy areas is greatly limited. And yet the success of military action depends in large measure on the number of these roads and their condition.

Taking this into consideration, the enemy will usually endeavor to block the routes with obstacles so as to delay the advancing forces. The terrain favors this where roads lead through thick forests with considerable marshes, rivers, lakes, swamps, streams. Abandonment of roads, detours, by-passes are most difficult in the circumstances.

The barriers encountered will consist of tank obstacles and those against foot troops. These will include felled trees, upended rails, etc., trenches, demolished bridges, viaducts, wire entanglements, mines, etc. The speed in overcoming these barriers will depend on the skillful action of well organized, strong reconnaissance and demolition detachments.

First of all, an effort is made to find a means of getting around the barrier. Reconnaissance, the location of detours and erection of passages are essentially the functions of demolition sections. The final clearing of routes is the function of specially detailed sapper detachments, which are attached to other types of forces to assist them in accordance with the type of obstacles involved, the number of these and the particular importance of the area involved.

The barriers involved may be of a most varied nature. Felled trees, cut one yard from the ground, and at times but partly stripped of their branches. Where the branches are stripped off the trees, the logs are placed on top of the branches and fastened to them by wire. The trees are arranged crosswise and fastened to one another by wire so as to render their removal more difficult. The obstructions, as a rule, are erected on roads and extend to the sides of the road 100 to 700 yards. The depth of the obstruction may be anywhere from 10 yards to 1 or 1½ miles. Barriers may be made up of a combination of high explosives, mines, grenades, and may also involve the use of poison gases.

On the discovery of mined ground, the sappers place alongside of the mine or high explosives their own charge

and detonate it, thus removing the obstacle. Where the depth of the barrier does not exceed 15 to 20 yards, the sappers place along the edges of the proposed passage powerful explosives and set them off. Where the depth of the barrier is in excess of 20 yards the sappers first remove any mines. The obstructing material is then removed with the aid of tractors, tanks or animals making use, in the process, of towing ropes, chains, etc. At times it will be necessary to have foot troops remove the material by hand. This is accomplished under the supervision of the sappers, after the trees have been torn up by explosives or sawed.

Mines are usually laid so as to conceal the mines or high explosives under tracks, in road ditches, under rubbish, at piles of wood, at demolished bridges. Mines are set off by the impact of wheels, caterpillars, or the feet of persons walking over them.

Signs of the presence of mined fields, separate mines or high explosives, may be detected by traces leading from the direction of the road, and also by the disturbed surface of the ground or snow; by fastened wire which, in turn, may be tied to other wire stretched across the road (as a snare). At the points where the mines are planted there may at times be conventional signs left by the enemy for the orientation of his own troops: blazed trees; scattered bits of hay, twigs, small holes in the snow made with the ski poles. Telephone poles are also utilized for orientation purposes, where the mines are planted on the road opposite the poles.

The searching of mines and high explosives is undertaken by the sappers with the aid of special instruments. The most commonly used in this connection is the proof-stick, or the bayonet fixed on rifle. Here a section of sappers proceeds along the road, with men marching in chess formation at one yard intervals and cautiously examining the particular area.

Discovered mines and high explosives are dug out by the sappers and destroyed near the road, or exploded on the spot. High explosives placed at a considerable depth are not dug out. Where wires are used, these are cut, after which the high explosives are set off.

The locations of mines or high explosives which for some reason have not been rendered harmless are marked by conspicuous signs so as to warn of the menace.

Troops will encounter all sorts of surprise explosions. Explosions are frequently employed which are set off upon contact with some object connected by wire or twine with an explosive device. For example, there is on the ground a purposely dropped revolver. When it is picked up a string attached to it pulls and sets off the charge.

The possibility of such surprises must always be kept in mind. Before touching a particular object a careful check must be made to see whether it has not attached to it some string or wire. Where the surprise is discovered before the arrival of the sappers a warning marker is placed on the spot.

Along with other surprises, use is made of delay action mines. This is an explosive connected with a clock mechanism or chemical device. It explodes at a definitely set time (ranging anywhere from several hours to a number of days). Mines of this nature are usually placed in buildings suitable for use by troops, for the establishment of headquarters, hospitals, storehouses, etc. Hence, upon occupying buildings a careful inspection must be made of them (especially of cellars, attics, floors, pipes, stoves, corners). A characteristic indication or sign of mines of the delay action type is the muffled sound of the ticking of a clock.

Obstacles are encountered in the form of broad trenches camouflaged and covered with material available in the vicinity. Before establishing a crossing over these a careful examination must be made to see whether or not these are mined. Discovered mines are set off, after which crossings are effected. At this point the trench is filled in with beams, logs, rocks, earth (depending on the particular material immediately available), or a small bridge may be erected over the trench from available material. Banks are filled in by hand. If the bank of the trench consists of a firm wall of wood or stone, explosives are used against it.

Antitank obstacles may often consist of large split rocks erected in 4 to 6 lines. The rocks are dug into the ground 50 to 60 centimeters while extending above the ground 70 to 100 centimeters. In order to effect passages here, the rocks are demolished or pushed aside by the use of tractors with the aid of rigging.

Wire barriers are occasionally erected on high posts in 2 to 5 rows, or in the form of a German fence (one row on tall posts, and from these extending the wire in both directions to lower posts). Barriers are also erected on low posts (stumbling block type), which are mostly placed before some other sort of barrier (wire on high posts, antitank trench, etc.).

In the creation of passages through wire barriers, the tank is of especial importance. Good results may also be obtained by the use of elongated explosive charges. In many instances, however, foot troops will be required to make their own passage with the aid of their wire clippers, or to overcome the barriers by throwing over the wire cloths, shields, or any other cover.

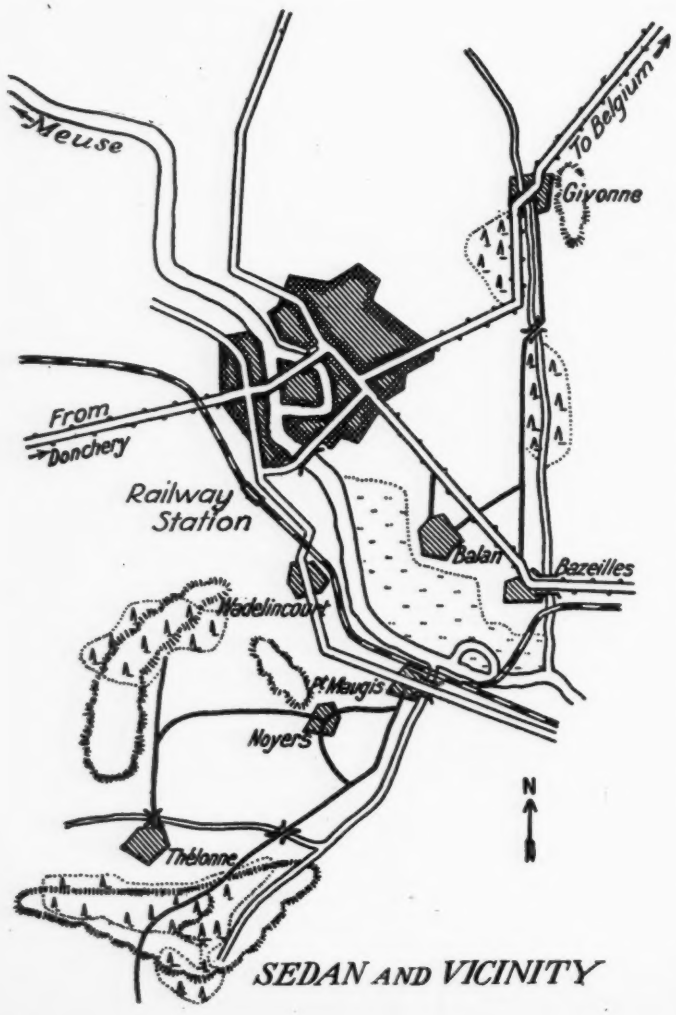
We have mentioned only the more typical obstacles. It is essential that we maintain a constant readiness for action against any other cunning tricks of the enemy, who will endeavor to delay the movement of the advancing forces. Special importance is here assumed by constant precautionary measures, which first of all involve thorough reconnaissance.

The First Action Around Sedan

[From an article by Sergeant Major Schulze, in *Militär-Wochenblatt*, 25 April 1941. Condensed at the Command and General Staff School Library, Fort Leavenworth, Kansas.]

"Sedan, 12 kilometers," the signpost tells us. Our motor column has reached the French border. Beside us smolders the wreckage of a German field kitchen, and the road is torn up by shell craters. There is a house with its exterior wall caved in and we can look freely into all the rooms. All the window panes in the rest of the buildings have been shattered. Only a few hours ago this terrain was still disputed. Where is the French defense, and what of Sedan, known of old as a strong point?

A dull and hardly perceptible rolling noise has now grown into the sound of battle. There is artillery fire. German Stukas (dive bombers) roar on their way above us. As we approach the village of Givonne, we can clearly see the impacts of the French artillery fire. Houses collapse, leaving only thick clouds of dust. Traversing the village will be impossible. We veer to the left into a park and make a new road. A wall is battered down, and with that we can make our way over an open field. A turn to the right now and we are by-passing the village. The French grenades are still bursting among the houses. If the enemy shifts his fire two hundred yards, he will get us. Our rear vehicles are taken under fire. The enemy has shifted his fire after all. We reach the last of the houses of Givonne and find cover. For the first time there is the command: "Dig in!" While we are doing this, twenty or thirty Stukas arrive, their objective to our right rear. Suddenly they start to dive; a whistling sets in, they go into steep dives, three or four bombs are loosed, the screaming grows shriller, there is an impact and a deafening detonation. Only a cloud of dust remains to be seen where the enemy position was. Meanwhile the planes are up and flying away, their mission accomplished. A new wave of Stukas comes roaring up, some sixty or a hundred of them there over Sedan preparing the infantry's decisive thrust. Enemy artillery positions have not yet been discovered, and the road forward is still being kept under fire by them.



SEDAN AND VICINITY

"Platoons will organize at once. The company will work forward to the village of Balan, one and one-half miles away, in the following order: 1st Platoon, Machine-Gun Group, 2d Platoon, then the 3d Platoon. In Balan, pause for further orders"—thus echo the orders of the platoon commanders.

We go forward under the protection first, of a wall, then of a small woods. The enemy shifts his fire, as though perhaps he has noticed something untoward. However, his shells are still going over our heads. Every time one bursts in our neighborhood, we get under full cover. The Frenchman's fire is coming ever closer. Now the 3d platoon sustains its first casualties: three of our comrades are mortally wounded. Meanwhile, the point of the company has left the protecting woods and is advancing on Balan behind a gently sloping hill. No one knows whether the village is occupied by the enemy. Suddenly the company commander comes back toward us on a motorcycle and urges us to hurry, for at four o'clock—in about ten minutes, that is—the company is to go into action. To make rapid advance possible, he has the two light machine guns go forward in his side car. Later he comes back for still another light machine gun.

And now our point is making its way along Balan's first gardens. Wire snippers have to keep working without stopping. Our route leads through gardens and over walls. We thrust on through the village and meet our battalion commander, who gives us some quick instructions; and then we leap forward. A great meadow lies before us. The enemy has established himself on a hill 800 yards away. At first we advance easily; then the meadow becomes moist, finally we are wading in a foot of water. Now and then a shell whistles overhead. We cut through barbed wire and continue on our way. The next moment, however, we are all lying under cover: machine-gun bursts whistle overhead, and are striking all around us. It is

no longer possible to advance. To our left are troops retreating. For us, movement of any kind is an impossibility.

The company sergeant-major is lying with his platoon 300 or 400 yards farther to our right. They have approached to within 80 yards of a river—the Meuse; for the rest of the company the river is still invisible. No bridge is to be seen. There remain only pitiful remnants of masonry to indicate where there used to be one. The enemy artillery, whose impacts have until now been behind Balan, has shifted its fire forward, until now it is just behind the attackers. With the enemy infantry in front of us, behind a river that we cannot cross, and with the impacts of the enemy artillery behind us—we can neither advance nor retreat.

Pioneers appear unexpectedly over on our right, strong men dragging rubber boats. The company sergeant-major forthwith decides to take a chance with the pioneers. He and three men leap forward and hurry along with them. The boat is placed into the water quickly. The sergeant-major and two of his men together with two pioneers jump into it and are off to the shore where lies our salvation. Reinforcements follow them in a second boat. The battalion adjutant is with them. By the time a third boat starts, the enemy artillery has shifted its fire to the point where the rubber boats are destroyed. The pioneers give way.

Some ten or twelve men get across. Our first men on the other side of the Meuse are lying just in front of an enemy bunker. If the French counterattack, they are lost. The bunker seems to be empty. Some time ago our German artillery sent some direct hits into it. "How would it be to fetch a few machine guns from this bunker for use in any defense action that might materialize?" One man disappears behind the structure. Some time later he returns with five prisoners; the bunker was occupied. After this they spread out some white cloths, for fire keeps coming frequently from the other side, from their comrades who do not yet suspect that there are already some of their own men on the other side of the Meuse.

Several hours have elapsed. While the company sergeant-major has been crossing the Meuse with a few men, the company has been lying in the water, with the enemy's fire passing above it. With care, a man here and there manages to regain the gardens of Balan in great bounds. Some of the men, moving with tremendous haste, take a wounded man back with them.

Late in the evening the company is again assembled in a park. The casualties are counted. Volunteers venture into the night to find the dead and wounded.

The enemy artillery is now firing on Balan. We are sitting in safe cellars in wet uniforms. Sleep is out of the question for the nights are bitter cold. At 1:00 AM the company sets out. We make our way in a file through the village avoiding the least noise, with burning houses as signposts. The nearer we come to the Meuse, the stronger becomes the sound of pounding and hammering. For hours our pioneers have been here building a bridge. Shells whistle overhead. Now we enter the rubber boats. We set foot in Sedan. The 2d and 3d Platoons remain behind in a park; the 1st Platoon and Machine-Gun Group advance through Wadelincourt, which is aflame, to a bunker abandoned by the enemy. Other troops have by now taken over the security. We are to function as reinforcements now, to be called on only in case of an enemy counterattack.

There is a sound of horses, rapidly approaching. We are ready for a dash and then out of the darkness loom riderless horses. A French car with officer equipment is in the road, so we don fresh French linen. Just as we finish changing clothes comes the order "March!" We proceed in file up the same hill that received us so warmly the day before. The enemy has already abandoned it. Only occasional planes force us into cover.

The whole company is again reunited on the slope. We have hardly arrived when the company commander orders: "The hills on that side are occupied by the enemy. We are attacking at once. 1st Platoon to the left, 2d and 3d Platoons to the right, Machine-Gun Group take over protective fire!" The enemy artillery has also begun its fire by now; its objectives lie well beyond us, in and around Sedan. One battery is firing with hairbreadth accuracy into the Meuse. While the platoons are making their preparation, the Machine-Gun Group climbs the hills. When the company comes out of the prepared position, it receives enemy fire from all directions. Casualties are particularly heavy for the 1st Platoon, whose route lay over the hill. Everyone has to lie in full cover and let the fire whistle overhead. The heavy machine guns do all they can do to hold the enemy down. When the company assembles behind the hill for a new preparation, we find that the rifles have used up almost all their ammunition. Our complement is completed again by the individual detachments: and then we advance in one of the trenches built by the French. The hill has been tunnelled. The 2d Platoon is already firing on the enemy lying on our oblique right. Battalion and regimental commanders are with them. The company commander is over at the extreme end, in a rain of bullets. The battalion adjutant comes up to him to communicate to him the order for action. Then the company commander gives the command to charge. A noncommissioned officer is firing round after round from his rifle. The groups begin to move and thus we go forward under enemy fire to the shell holes 50 yards away. More and more groups jump clear and pour into the field, making their way through the barbed wire with shears—or without them. Our troops in the adjacent sector also seem to be advancing. This sudden attack is too much for the French; all those in front are fleeing. What fire we are receiving to impede our progress is from the bunkers in the distance. Farther and farther pushes our point. English pursuit planes make another attempt to break up our attack with their machine-gun fire, but succeed only in making us take cover for a short time.

Our first French prisoners come out of a clump of woods, their hands up. They come running up to us with faces twisted with fear. We reach the wood and grope our way into it carefully. Suddenly the enemy appears. We call to them, thinking that they will surrender. As soon as they recognize us they retreat.

The company has now attained a depth of at least 600 yards, and is filing through the wood. We take a large number of prisoners and send them to the rear. The point

is storming forward. We reach the bunkers and find that they have been abandoned. The battalion adjutant turns off to the left with a few men. Thélonne lies over that way. He sends a man back to bring up the rest of the company and request our artillery to shift its fire farther forward.

More hours have passed. In front of Thélonne the other companies come up with us. More troops appear out of the sector adjacent on the right; so far we had only suspected their presence. There are also tanks now. When the first tank starts off to enter the village, certain spirited men swing up on its rear and ride along to the edge of the village. They are shielded from enemy fire. While the tank is taking certain houses that are still occupied under fire, they jump off and go next into the first buildings they came to. Antiaircraft and antitank guns appear and begin to look about for objectives. On the other side of the village a French antitank gun goes into position on the side of a hill. After firing three or four rounds our antitank gun silences it. Fleeing Frenchmen scamper on up the hill.

The company assembles again, while more and more vehicles arrive with fresh troops. We are now, however, only about half the strength that we were when we left the position. The others have failed to find us and are with other companies. Despite the efforts we have already made, we must make one more. "Men, this will be the last," says the company commander. "We must pursue at once, the main job has been done, and the enemy is fleeing!" With our last bit of strength we comb Thélonne. We meet only feeble resistance in the village proper, and this we break with carbines and hand grenades. A great number of Frenchmen are taken prisoner, completely exhausted. Finally we reach the hill and find there an artillery position apparently abandoned in flight. Some of the guns are still loaded.

English fliers roar over us, apparently intent on reconnaissance. German pursuit planes are on their trail.

The thrust through Sedan's fortified heights has been successful. The men, exhausted, drop into the grass. The troops that have not yet seen action now climb down from their vehicles and take up the pursuit.

Combat Training

[From an article in *Militär-Wochenblatt*, 17 January 1941. Translated from the German in the Translation Section, the Army War College, Washington, D. C.]

In the following, are pointed out a number of factors in combat training which are outstanding, though by no means new. A reason for bringing them out again is that all along the line have been observed offenses against these—old—experiences and doctrines, offenses which are due in part to ignorance, in part to failure to appreciate their importance.

(1) Most tactical exercises suffer from an improper conduct of the umpires. It may seem odd to speak of umpire training in these times of war. However, it is imperative that all commanding officers, down to the company commander, realize that successful combat training cannot be conducted without thoroughly trained umpires. That holds true of the squad as it does of the division and all intermediate units. Therefore, umpire training is not an end in itself, but a means to an end—and a vital one. That applies to the training of both officers and noncommissioned officers. All grades can and must be required to learn the nature, meaning and purpose of umpire duties to a point of being able at any time to assume the duties of an umpire of corresponding grade and perform those functions to the benefit of the combat training of the troops.

Any tactical exercise, whether it be conducted by a small or large unit, represents combat between two opponents. In actual warfare, the decisive factors are: (a) Superior fire power; (b) superior performance on the part of the command; (c) superior performance on the part of the troops.

Within the scope of his particular assignment, the umpire must first weigh as to time and space the performances; that is, the orders issued by the leaders, the actions and conduct of the troops, and, finally, the fire effect on both sides. Next he must evaluate them. Finally, he must present his findings in peacetime fashion, by making proper reports to the corresponding officer in charge.

There is neither time nor space, nor is it the object here, to go into the details of umpire training. Regulations, textbooks and other matter contain the necessary information in clear and expert language.

It shall be demonstrated merely that proper combat training cannot be given without thorough training of umpires, a matter which certainly calls for time and effort. As an example, we shall select the tactical exercise of a rifle company reinforced by heavy weapons. Though figures may be misleading, and at the risk of being mistaken by a few yards, we shall assume that this rifle company in action is deployed over an area around 300 yards in width and 500 yards in depth. While the area is larger in the defensive, it may be smaller in the offensive. After all, that is of no consequence. Aside from this deployment in space—the void of the combat zone—there is the factor of camouflage, exploitation of the ground, and concealment from observation. In other words, the irrevocable fact remains that the officer in charge of the exercise, himself, can see precious little of his troops. The less visibility the terrain affords, the more that is the case. As extreme examples, we may mention exercises held at twilight, in fog, or in complete darkness—all of which are very necessary. In exercises of large units, the reinforced battalion, reinforced regiment or division, it is wholly out of the question for the officer in charge personally to observe even major parts of the exercise. Here we arrive at the meaning and purpose of the umpires: It is up to them to observe and recognize whatever the director of the exercise cannot see. It is the duty of the umpires to correct minor shortcomings and mistakes, thus serving as tactical instructors during the exercise. Furthermore, at the conclusion of the exercise, the umpires report to the commanding officer obvious general mistakes observed, so that additional training may be given at the proper place. But, where is that done? Thus is seen the reason why the same mistakes are made over and over again, mentioned in the critique, and yet repeated the very next day—a tiring and fruitless effort. Such waste of effort can be avoided only

by expert, thorough and continuous training of umpires. That calls for constant instruction of officers and noncommissioned officers in the fundamental duties of umpires. It requires that the umpires be informed prior to the exercise about the object of the exercise, the plan of action, and all necessary details—which, naturally, takes place best in the exercise terrain on the spot. Nothing is so unimportant as to warrant exclusion from the mission of the umpires. The issue of orders by the commander of the troops and the conduct of the individual rifleman or driver of a combat vehicle are of equal importance. Nothing may escape the trained and critical eye of the umpire. One carefully planned, properly executed and evaluated tactical exercise has greater training value than a whole series of exercises in which mistakes and deficiencies are not corrected.

Concerning the details of the functions of umpires, here are merely two examples in point: A certain number of casualties must occur in every action. However, it is senseless to remove men from action as casualties during the initial phase of the exercise and leave them inactive until "Recall" is sounded. Aside from the fact that such "casualties" usually spoil the general scene of action by their careless conduct, the men learn nothing. It would be better to leave them in barracks.

The other fact is that in many cases the umpires, themselves, fail to conduct themselves properly. They may be seen standing fully exposed near some splendidly concealed machine-gun nest. As a result, the opponent detects a feature which he would certainly not be able to recognize in actual war. In general, the umpires must move about as under actual combat conditions. They must be swift and agile; possess clear tactical perception; be able at the decisive moment and place to determine whether the situation of friend or foe is more favorable from a tactical viewpoint; and make brief, though clear decisions accordingly. A speedy and absolutely clear decision is more valuable in any case than a belated and compromising decision, though the latter might appear more "correct."

It is hardly to be denied that there remains much to be done in this respect. Hard work will bear rich fruit.

(2) In all exercises, down to that of the smallest contingent, the squad, the enemy is represented in some form or other. While, in exceptional cases, representation of the enemy may be confined to the use of silhouette targets, troops—perhaps supplemented by silhouette targets—must be employed as a rule. The purpose of any tactical exercise is the execution of a given problem by the unit under instruction. It is an established fact that the idea—or, better said, the absolute necessity—of "training" also the "enemy," that is imparting instruction to him, usually is relegated to the background if not entirely forgotten and neglected. That holds true, especially, of tactical exercises by small units. That, it is felt, is wrong and takes up time which should be used to advantage. Indeed, such neglect may be detrimental to the discipline and standard of training of the elements employed to represent the enemy.

The "enemy" can and must derive some benefit and learn from the exercise in which he is assigned to "represent the enemy." This is feasible and should be practiced more commonly than it has been in the past. How much time is "wasted away" throughout a year in "simulating the enemy" (note this common expression which is partly right and partly wrong) or, for instance, at the target range by men waiting their turn to fire? It is a pity to waste so much valuable time. This reminds one of the popular joke about waiting being part of the life of the soldier, a jest expressing how accustomed the soldier is to that evil. The joke is well known—and, unfortunately, it is justified.

The least demand that must be made is that the enemy be given a tactical assignment. For the sake of demonstration, here is an example: A reinforced rifle company is practicing the occupation of a departure position for an assault on an enemy installed in defensive positions behind a creek. This problem would furnish training material for two or perhaps three tactical exercises. The "enemy" is assumed to comprise a platoon reinforced by heavy weapons. What can the "enemy," his mission being defensive, train and learn from this situation? First of all, he may conduct intensive reconnaissance and observation, closely combined with communication . Where is the opponent located? Where will he most likely attempt a crossing? The answer may be derived from the ground reconnaissance and evaluation of the terrain. Judging by this estimate of the situation, what measures will the enemy take? And so forth. It shows how unlimited the possibilities are of making a tactical exercise instructive and interesting for the "enemy," even in the case of the smallest unit. Furthermore, a plan of fire must be established for all infantry weapons as well as for the artillery—though the presence of the latter be assumed. It is impossible to assign a battery for every company exercise, since such a procedure woud interfere too much with the training schedule of the artillery. However, it is advisable to request the nearest artillery unit to furnish a lieutenant or sergeant, or even a competent corporal, for the exercise. The function of this officer or noncommissioned officer would be to represent the battery which is assumed to be supporting the infantry; to incorporate the battery in the fire action; and so to contribute materially toward an appreciation of the nature of the teamwork of infantry and artillery. Almost any artillery battalion or battery commander will gladly meet such requests by the infantry. Yet the request must emanate from the infantry. If that method is followed, the "leader of the enemy" will have both theoretical and practical missions. In short, the "enemy" will not be an inactive and disinterested mass of troops, but real soldiers with a task as well as the means to execute it.

Not to go into details, we shall add but a few remarks. For instance, on the side of the "enemy" (defensive), all heavy weapons may vie with each other, so to speak, in opening fire rapidly and effectively on worthwhile targets. Target recognition, target description, adjustment of fire, fire for surprise effect, shifting fire, and many other phases of training can be practiced in wellnigh perfect fashion. One excellent form of exercise consists in instructing the combat zone observers and patrols to keep a minute record, as to time and place, of all they see and hear. The advantage of that practice reveals itself plainly at the critique when the observers and patrol members present what, whom, when and where they saw and heard. It will show clearly what mistakes have been made. It is important that everybody, down to the last intelligent man, realize where he has made a mistake, so that he may adopt the proper method at the next exercise.

Thus, during a recent attack problem, in which the troops exploited all natural cover perfectly and smoke screen was used, the common mistake was made by several leaders to shout their orders in a loud voice. Despite the fact that the "enemy" could see nothing, the attacker betrayed his presence by shouting his orders and other loud talking. A record had been kept of the time and place of all sounds heard. This record was presented at the critique. It served to convince all personnel that had taken part in the exercise that it was necessary in the future to be more cautious in using the voice in murky weather, in fog, or at night. Thus the object of having the "enemy" keep a record of these observations was achieved. It goes without saying that the umpire in such cases must serve as the instructor.

Finally, it seems that tactical exercises should be marked by a greater variety of situations. The idea is to enliven the action on both sides and to guard the unit under instruction against the familiar surprises that have been encountered in the present war, surprises against which our troops have been most vulnerable at times. For instance, the counterassault should be launched from an entirely different direction from that expected. A threat to the flank must make itself felt with absolute suddenness, or the attack may not develop at the outset as smoothly as anticipated, but call for the employment of additional heavy weapons. In short, exercises are apt to become too much of a routine. The usual problem develops as follows: The friendly forces assume a departure position without encountering any interference (note well); then they draw fire; and so forth. Why is the problem not planned so, for a change, that a hostile patrol penetrates into the departure position? Why is it not arranged so that the offensive will be checked during the initial phase of the attack? Situations of that kind are common in war; yet they are practiced far too infrequently. There are many other opportunities to animate combat training, the most beautiful part of military instruction. More so than any other phase of military training, it combines within itself schooling in the exercise of caution as well as resolute action and the training of officers and men.

The 1st Bn. 196th Inf. in the Bois de la Berliere 24-25 May 1940

["Der Einsatz des I. Battalions Infanterie-Regiments 196 im Bois de la Berliere am 24. und 25. Mai," appearing in the June 1941 *Militärwissenschaftliche Rundschau* (German). Condensed at the Command and General Staff School.]

Orders to proceed to Yancq were issued our battalion, while it rested briefly at a point about 10 miles southeast of Sedan, near Mouzon. The battalion had been engaged in severe combat 15 to 21 May.

Arriving at Yancq at midnight after a strenuous day's march, we took up a position of readiness for the night just outside the village. Antitank units furnished protection towards the southwest in the direction of Stonne. Violent combat was still in progress there.

The battalion was ordered to search the Bois de la Berliere on the morning of 24 May, in order to clear this area of black troops and to organize a defensive position with a main line of restistance at the southern edge of the woods. The battalion was also ordered to establish contact on the right with units on the eastern slope of Mt. du Cygne, and on the left with the adjacent infantry regiment located 1,100 yards to the east.

At noon, we moved into the woods about one mile south of the Bagnolle crossroads, just southeast of La Besace, where we prepared to attack south. French prisoners, black and white, captured in the neighboring sector, came through our lines. They had been lying in their foxholes in these woods for three days without rations.

Our attack at 2:45 was preceded by a 45-minute artillery preparation. We crossed the open field just in front of us and reached the northern edge of the Bois de la Berliere without encountering hostile resistance. The woods were dense with underbrush. Visibility was limited to a few yards. The French had ordered their colored troops to break paths with their bush knives.

Previous experience in woods combat had taught us that we must maintain direct contact from man to man while advancing through such an area in order to avoid sudden attacks from the flanks or rear and to clear out riflemen stationed in trees.

Therefore, the 2d Company, initially in reserve, was employed on the right flank. Thus the battalion, deployed on a single line (the 2d Company on the right, the 1st Company in the center, and the 3d Company on the left), maintaining contact with the neighboring regiment, advanced

through the woods, evenly and without gaps. (The machine-gun company followed in rear.) The enemy fled from our assault and we met no hostile resistance until encountering violent machine-gun fire from prepared positions near wood piles at the edge of a clearing about one mile south of our line of departure. These nests were overcome by a pincer-like method of attack. Individuals, covered by fire, worked their way forward from one wood pile to the other in order to approach these machine guns from the flank. After about three hours, during which we had used every possible means at our disposal, this resistance ceased. A French first lieutenant and a corporal with 25 black colonials surrendered.

The advance continued. Beyond the clearing, the woods was even denser than before. The men worked their way forward, side by side, only with greatest difficulty. After a total advance of about two miles, the battalion halted at dark along a path and posted security for the night. Contact had been lost with the adjacent unit at the right. Hence this flank was open and special measures had to be taken for its protection. The night passed without incident.

The attack was renewed in the morning. Our systematic and rapid advance forced the enemy to give up the rest of the woods without fighting. We were, therefore, soon able to reach the line designated as the main line of resistance. In the meantime, the gap on the right was closed. Ahead of us was a hill covered with a thick growth of underbrush. An artillery observer, attached to the battalion, climbed a tree and directed effective fire against the enemy on this hill. The battalion constructed hasty field fortifications all day long. By evening it had established a good defensive position which took full advantage of the dense woods. The 4th Company (machine-gun company), which had followed close behind the battalion in its advance through the Bois de la Berliere, and which had employed two machine guns to assist in reducing the resistance at the wood piles in the clearing mentioned above, was divided up and attached to the rifle companies. At night the men took position in their individual emplacements, held their rifles with bayonets fixed in their hands, and stared out into the darkness which was augmented by the thick underbrush. We had issued orders not to fire in order to prevent nervous individuals from disclosing our position.

At first we received a few rounds of fire at intervals. Gradually the hostile fire became stronger and kept coming closer, indicating that the enemy was advancing towards us with strong patrols. Eventually, violent machine-gun fire opened up all along our front. We requested the artillery barrage fires which had been definitely determined the previous day with the help of the artillery observer. After a few corrections had been made, this fire was placed with greatest accuracy. Confronted with this barrage, the enemy decided to retreat and cease firing. The French batteries, discovered on the previous day, were bombarded so severely that they did not even have a chance to open fire. We heard shouting, sirens, motor noises, as well as departing automobiles, so we assumed that the hostile batteries were being moved to the rear. During the remainder of the night, there was only intermittent rifle and machine-gun fire from the hill in front of us.

In spite of heavy fire, our losses were few, thanks to the excellent hasty field fortifications and camouflage constructed by the battalion.

During the following day, we improved and consolidated our positions. The battalion was relieved in the evening.

Dive Bombers, Paratroops and Home Guards

[Condensed from an article in *Fighting Forces*, October, 1941.]

In *Truth*, Commander Goeffrey Bowles recently commented on the feat of Corporal of Marines T. W. Neill, who shot down twenty-five bombers singlehanded with his Bofors gun in Crete, without sense of fear or thought of taking cover.

Commander Bowles affirms, in forthright fashion, that the dive-bomber is not as formidable as it is generally made out to be. He shows that the bombs from dive-bombers make large holes in the ground but hurt surprisingly few soldiers when extended in the open, while their speed makes their machine-gun aim surprisingly ineffective. He points out that almost daily we hear of a trawler fisherman shooting down a dive-bomber with his Bren gun. He inveighs against the bomb-panic virus, the doctrine that one must go to ground when the dive-bomber attacks. "A ship," he says, "cannot be told to crawl into a cave, so the Navy soon learned to shoot down dive-bombers. Even on such a large target as a ship the percentage of dive-bomber hits is absurdly small. The Navy was originally infected with the official Bomb Scare—which caused its failure in Skagerrack—but our fighting admirals have cured the Navy of an idea which must have exuded from the bomb shelters of Whitehall."

The effects of dive-bombing are not, perhaps, quite so negligible as Commander Bowles makes out, witness the losses of cruisers and destroyers which the Navy sustained during the Crete operations. But the dice were heavily loaded against the Navy on this occasion, and given anything like fair conditions we agree that the menace of the dive-bomber can be met by resolute action.

All this should have valuable lessons for the Home Guards. We are convinced that if ever they are called upon to deal with invading Huns it will be a case of action against dive-bombers and paratroops, and not of dealing with tank attacks, which, as we pointed out in our last issue, involve sea-borne invasion, which can now be, almost certainly, ruled out as a practical proposition. Of course, it is not beyond the bounds of possibility that gliders may be produced capable of carrying 12 to 15 ton tanks, and the Germans are known to have been experimenting with gliders having a very large wing span. They have, in fact, used small tanks transported by air in Russia, but these seem to have been

promptly and effectively dealt with by the Russian Air Force, and it is probable we shall hear very little more of the attempt to transport tanks in gliders, at any rate in cases where strong air force opposition is likely to be encountered.

But paratroops are a different matter. These are likely to prove a tough proposition, especially if they execute a concentrated attack. Let us now suppose that such an attack is being made against a specific area in this country e.g., in the neighborhood of an important power station, which is protected by Home Guards. The attack will most probably come at dawn, and is likely to be preceded by an onslaught from dive-bombers and ground-strafing aircraft, who will hope to disorganize the defence. That is the time to bear in mind Corporal of Marines T. W. Neill's fine action in Crete. As Home Guardsmen you may not be armed with Bofors guns, but you will have Lewis guns, possibly even Bren guns, and certainly rifles, and if you have got the guts to stand firm you are likely to do a lot of damage to the dive-bombers, even if you don't bring them down. In any case, remember that the dive-bombers will clear off before the paratroops arrive. Each paratroop plane has about ten to twelve men, and takes about ten seconds to disgorge its crew, who jump from a height of about 200 to 300 feet. The parachute opens automatically and the descent lasts only about ten seconds. There are especial parachutes for the equipment, which are usually colored. This equipment is in containers which fall to the ground even more quickly than the men.

The parachutist carries on his own person hand grenades, a knife and an automatic pistol, but he relies for heavier weapons on the containers.

And so everything points to the fact that the speediest possible action is necessary when dealing with paratroops who, on landing, are handicapped in two ways, i.e., they must first of all get rid of their parachute harness, and secondly, their armament is of an extremely short-range nature until they can get at their containers. Extreme mobility should therefore be the key word of our Home Guards. The amount of petrol allowed for Home Guard mobile patrols is, as a general rule, of a none-too-generous nature. Yet, in our opinion, this is far and away the most important job the Home Guards are likely to be called on to carry out.

It might be that the Germans would try to reinforce their paratroops by troops brought by gliders, but, of course, in this case, a landing-ground of some sort is essential. This will generally mean an aerodrome, and aerodrome defense is, for the most part, well catered for, or, at any rate, in process of being well cared for.

But the possibility of landing on level, or comparatively level, ground, other than aerodromes, should not be lost sight of by Home Guards, and, here again, it is obviously a case where extreme speed will be required. The Home Guards, on the spot, must dash out, even if outnumbered, and endeavour to kill the Huns, whether they have come by parachutes or by gliders, in the shortest possible time. Plenty of practice in dealing with such situations is obviously necessary, but there should be no difficulty whatsoever in evolving simple schemes which would give such practice. But, of course, such practice schemes require petrol.

In our opinion the Home Guards should concentrate on those jobs which they are most likely to have to deal with. The General Staff, who have to deal with their training, will, almost certainly, with understandable zeal, tend to over-elaborate the work of the Home Guards, and issue voluminous brochures in numerous methods of attack and defence. But it does seem undesirable that Home Guards in the very small amount of time which they have available for training, should have this valuable time wasted in coping with "high-falutin' " operations which are never likely to eventuate, and which, for the most part, generally involve over-emphasis on the defensive cult.

The Messerschmitt Me 109F

[Condensed from an article in *The Aeroplane* (Great Britain), 1 August 1941.]

A Messerschmitt Me 109F was forced to land on the cliffs of Kent on 10 July. It was almost undamaged and will soon be flying again in England. By far its most interesting and significant feature is the new *Mauser* cannon.

This cannon, which appears on the Me 109F1 in 20-mm form and on the Me 109F2 in 15-mm form, has the astonishing rate of fire of 900 rounds per minute, compared with the 90 rounds per minute of the 20-mm guns fitted to the wings of the Me 109F. Ten times the rate of fire but, fortunately, not ten times the ammunition; in fact, only 200 rounds—sufficient for 13 1/4 seconds.

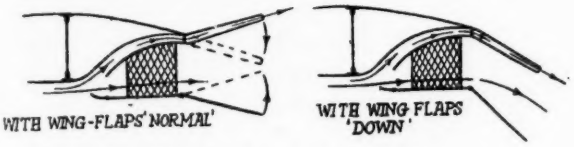
Thus, although the weight of fire of the two machine guns and one cannon of the Me 109F (784 pounds per minute) is several times as great as that of any of the British single-seat fighters fitted with cannon or machine gun or both, the duration of that firepower is much less. If the Germans can produce a bigger fighter to carry more ammunition then they have in the Mauser cannon an exceedingly formidable weapon.

The cannon is belt fed from the ammunition box in the starboard wing and fires through the hollow spinner. It is manufactured in the same works that make the standard German infantry rifle and infantry machine guns and shell guns. The company has not manufactured an aeroplane cannon before, but a higher rate of fire has been achieved in its new gun than in anything in the past. In spite of the high rate of fire the Mauser cannon appears to be reliable —although the long duct suggests trouble. The gun is electrically cocked and fired. Aiming is through a rather inferior reflector sight.

The rate of fire of the cannon seems almost unbelievable —approximating as it does to the rate of fire of a high-speed machine gun. Nevertheless, this rate of fire is confirmed as accurate by armament specialists of the Ministry of Aircraft Production. The true significance of this high-firing power is not evident in the Me 109F because it cannot carry enough ammunition.

The wing is reduced in thickness and modified in section to reduce drag. The most interesting feature is the rearrangement of the radiators and flaps. The radiators remain as before under the trailing edge of the wing roots. They are now deeper in the wings and so project only a short way below the undersurface. Adequate cooling is ensured by the fact that "tired air" is picked up at a point in the duct just in front of the radiator, led over the top and discharged through

a channel which forms a double trailing edge to the inboard flap. The flap movement is controlled thermostatically. The new cooling system is regarded as very efficient since it affords a far better duct than before, giving a large expansion on entry and thus low velocity cooling with adequate control.



THE WING RADIATOR ARRANGEMENT.

Other interesting features of the Me 109F are: rubber bag fuel tank, holding 88 Imperial gallons, housed in a plywood box behind and under the pilot, with a 10-mm armor plate in front of the tank; master compass housed in rear fuselage connected to repeater dial on dashboard; Sperry type, independently sprung, blind flying panel; and, new type high-pressure oxygen equipment fitted for fighting at height.

The plane has a top speed at 13,000 feet of 362 m.p.h., and 380 m.p.h. at 21,000 feet. Its ceiling is in the region of 40,000 feet. Its estimated range is 370 miles at 307 m.p.h. in 1½ hours, or 600 miles at 262 m.p.h. in 2⅓ hours.

Support of Infantry Regiment by a Light Artillery Battalion

[Condensed from an article, "Battle of the Somme," by Major Reinicke, in the *Artilleristische Rundschau*, April 1941.]

Among interesting observations in this article is the evidence of decentralization of command in a pursuit, with the battalion commander permitting battery commanders to act on their own. Artillery observation and guns are generally well forward, in close support of the infantry. The battery establishes liaison with the infantry battalion, if the situation permits. Where wire can be laid to advantage by motor, in this horse battalion, it is done. Where feasible, a battery commander uses a motorcycle to reconnoiter.—THE EDITOR.

Following its employment at Peronne, the light artillery battalion, which smelled powder for the first time during that engagement, was re-grouped within the division. It remained near Ham on the Somme for ten days. This was World War terrain. The Somme Canal, which extends along the Somme River closely to the west thereof, is lined for miles with poplar trees standing close together. They obstruct the view of the opposite bank. A small degree of observation to the other side is possible from the higher buildings and towers of Ham. The Somme Canal crosses the southern part of the city of Ham. The battery observers had to go into the houses on the near bank of the canal in order to direct the fire on the well fortified enemy positions which were scarcely 100 yards away on the other side. The French troops consisted of selected men—Alpine chasseurs. They were concealed behind walls and windows and in trees.

Their marksmen inflicted casualties among our observers and telephone operators.

Slightly rolling terrain made it necessary to search carefully for positions affording cover. Satisfactory positions were only available five kilometers from the near side of the Somme. The French artillery was wide awake. Their observation posts must have also been in higher buildings on the opposite side of the Somme affording a good view. They directed harassing fire at the exits of the city and at neighboring villages. It consisted of irregular single rounds intermingled with sudden bursts of fire. Casualties were sustained among our drivers and horses. The battalion command post was repeatedly caught under well-directed fire of a French battery with several hundred rounds. However, the casualties were small, either because of a wonder or because they were well dug in.

Finally on the morning of 5 June the long awaited assault commenced. Following the artillery preparation against the points where the breakthrough was to take place, infantry commenced the attack over the Somme at 5:35 AM.

Artillery lieutenants as advance observers led the attack with the company commanders across the canal. At several places where well-directed artillery fire kept the enemy down it was possible for a few companies to get a foothold on the opposite side. In difficult fighting against concealed and flanking machine guns it was only possible on 5 June, however, to establish shallow bridgeheads at a few places south of Ham.

On the following morning, 6 June, at about 11:00 AM, the artillery battalion commander received the following verbal order from the commander of the artillery regiment at the regimental command post.

> "This afternoon the division will attack with Infantry Regiment 'X' (heretofore division reserve) in the area on both sides of Offoy in order to force a crossing over the Somme. The 3rd Artillery Battalion and 4th Artillery Battalion will support the attack of Infantry Regiment 'X.'
>
> "The artillery battalion will remain in its present firing positions. (Just north of Sancourt.)
>
> "However, the observation posts will take position along the road Toulle-Matigny at places in conformity with the mission."

Reconnaissance disclosed the following:

Artillery battalion command post 200 yards south of the crossroad in Matigny.

Observation post of the 9th Battery as call battery in immediate vicinity.

Observation post of the 7th Battery in the last house of Matigny on the road leading to Toulle.

Observation post of the 8th Battery in the open field south of the road about one kilometer southeast of Matigny.

The observations posts, in this set-up, were very far (two to three kilometers) to the side of the line of fire. This

disadvantage had to be accepted, because a change of position of the batteries behind their new observation posts could not be completed by afternoon, and also because of the scarcity of positions affording cover and the large number of batteries already there. Later it was found that the disadvantage of having the observation posts so far to the side presented no handicap because of the nature of the fire.

Visibility from these observation posts was restricted by the poplar trees along the Somme Canal. The batteries were ordered to send advance observers to the front. In addition the artillery liaison section was employed which established liaison with the 2d Battalion of Infantry Regiment "X" at Offoy.

The laying of telephone wires to the new observation posts was difficult in the great heat. Available motor vehicles of the battalion were used to lay the wire and transport the telephone equipment and telephone operators.

The artillery battalion command post was established in an old trench of the World War. In the vicinity were ruins of World War houses.

During the afternoon the following order was received:

> "Hour of attack: 7:00 PM.
>
> "Direction of attack of Infantry Regiment 'X' (center line of attack): western edge of Offoy—Hill 70 (one kilometer east of Hombleux) — Esmery Hallon (church)."

In addition the artillery battalion commander received a verbal order from the artillery regiment commander for brief artillery preparation, as well as a simple firing plan inscribed on map 1:50,000 and the designation of the artillery concentration. As it was impossible to reconnoiter the individual areas of enemy resistance, the artillery battalion was assigned an impact area several hundred meters wide immediately on the far side of the Somme Canal about one kilometer southwest of Offoy. The battalion was to direct creeping (barrage) fire over this area. Adjacent on the right was the 4th (heavy) Artillery Battalion. A smoke screen battery adjoining was to put down a smoke screen.

The firing plan read as follows:

a. 7:00 to 7:05 PM.—Fire directly behind the Somme. (Infantry Regiment "X" will attack and cross the Somme at 7:00 PM.)
b. 7:05 to 7:10 PM.—First lengthening of fire by 100 meters.
c. 7:10 to 7:15 PM.—Second lengthening of fire by 100 meters.

The number of rounds per period "a" to "c" were about 12 to 30 rounds per battery with an increase in the rapidity of fire at 7:05 PM and at 7:10 PM.

As firing for range was forbidden for reasons of surprise, the data for firing had to be taken from map 1:50,000 (enlargement of map 1:80,000). There was no weather report. The map data was used without corrections of any kind. During the preceding days it had been found that there was little difference between the map range and the range determined by firing.

The battalion urgently needed ammunition for this mission. The 8th and 9th Batteries still had about 360 rounds each, but the 7th Battery had only 78 rounds. It was to be expected that considerable ammunition would be required after the prescribed firing plan had been executed. In order to get the ammunition in time, that was requisitioned in the afternoon. The adjutant of the battalion was sent by motorcycle to escort the division ammunition supply column from the railhead at Forreste (two kilometers northeast of Douilly) direct to the firing positions. It was possible to drive the ammunition trucks up to the 7th and 8th Batteries. The 9th Battery sent for its ammunition which arrived at 7:30 PM.

All batteries of the battalion opened fire punctually at 7:00 PM. There was some concern as to whether it would be accurate due to the incomplete firing data. Soon smoke clouds became visible in the full width of the battalion, emanating from the impacts behind the trees of the Somme Canal. The fire was nearly all right laterally. At the first lengthening of the fire a lateral dispersion was noticeable, caused by the oblique direction of fire of the batteries. The artillery battalion commander therefore had all batteries direct their fire 100 yards farther to the left, the particular object being the area directly behind the bridge southwest of Offoy where enemy resistance was still assumed to be. Shortly thereafter, the artillery liaison section reported that the fire was correct.

In the Somme Valley rifle and machine-gun fire livened up again. At about 8:00 PM the artillery liaison section reported that parts of the 2d (right) Infantry Battalion had succeeded in crossing the canal, but that there was still some fighting with individual marksmen in trees. Similar reports were received from advance observers of the batteries. A pioneer company was ordered to rebuild the demolished bridge at Offoy.

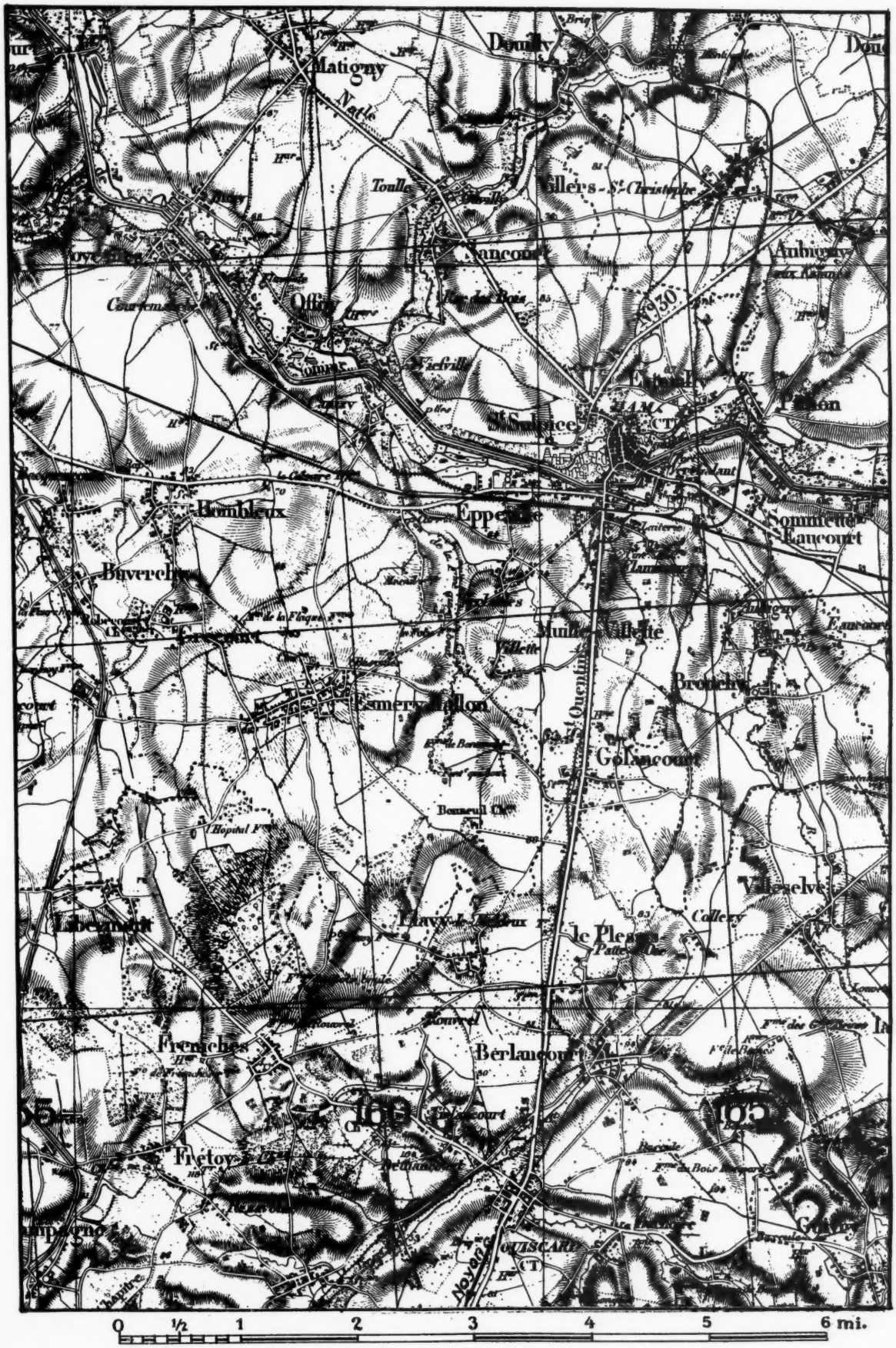
The artillery battalion commander then decided to move one battery up to the front and later to move up the other batteries in order to keep his battalion up with the attack. However, as the bridge was not yet completed, the battery had to go into position on the near side of the Somme near the bridge at Offoy. At the same time a position for one of the other two batteries was reconnoitered.

However, the following picture presented itself at the front at about 9:00 PM:

> "The combat situation is still unsettled. In the Somme Valley there is still lively rifle fire. In the high poplars along the Somme Canal there are still many riflemen. Construction of the bridge could, therefore, not yet be commenced. The 1st (left) Infantry Battalion has not yet succeeded in crossing to the other side. It is also subjected to flanking fire from the left from the neighborhood of Canizy where strong enemy forces are still located."

From this picture the following estimate of the situation was arrived at:

> "The enemy in the Somme Valley near Offoy can consist only of individual sharpshooters in trees, who are rendering scattered resistance. As parts of the right infantry battalion have crossed the canal, it will soon get rid of this resistance. It is not possible for the artillery battalion to combat the sharpshooters concealed in the trees.
>
> "It is imperative that the artillery battalion bring up its artillery by echelons in order that at least one or two batteries remain close to the advancing infantry regiment. The flanking effect of the enemy at Canizy makes it difficult for the batteries to move up along the northern bank of the canal which is under enemy ob-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Bouchoir
Bussy
Villette
Esmery-Hallon
Golancourt
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servation. However, the present artillery positions are too far to the rear for the continuation of the battle. The distance from the positions to the Somme Valley is about five kilometers. It is therefore necessary to bring up at least one battery at once despite the unsettled situation on the left flank. Although the battery will remain inactive for the remainder of the day, because darkness has set in, it will be on hand in the morning when the attack is continued."

The 7th Battery was ordered to go into position immediately north of Offoy. The battery commander drove up at once by motorcycle to reconnoiter an observation post at the southern edge of Offoy and to establish liaison with the infantry battalion located there.

In the meantime, darkness set in and the rifle fire in the Somme Valley subsided.

At 10:01 PM the artillery battalion commander received the following verbal order from the commander of the artillery regiment at the regimental command post in Toulle:

"Division orders have placed the 3d Artillery Battalion under Infantry Regiment 'X.' Enemy resistance has weakened.

"Continuation of the attack tomorrow morning, 7 June, at 6:00 AM.

"To this end the artillery battalion will have two batteries in position immediately north of the Somme Valley at break of day tomorrow morning."

The artillery battalion commander tried to get in touch at once with the commander of Infantry Regiment "X." After some search in the dark he found him at 11:00 PM in a farm house in the southwestern part of Toulle and reported to him.

The commander of Infantry Regiment "X" advised the artillery battalion commander regarding the situation and the plan as follows:

"The (right) 2d Infantry Battalion has crossed the Somme Canal and has advanced several hundred yards. Enemy resistance has weakened in front of the (left) 1st Infantry Battalion. At the moment, there is a pause in the fighting.

"Tomorrow morning at 6:00 AM the regiment will continue the attack over the Somme in the same set-up as heretofore.

"First attack objective Hill 70, one kilometer east of Hombleu; then Esmery Hallon.

"Dividing line between 2d and 1st Infantry Battalions: Hill 70-church-Esmery Hallon.

"To this end the 3d Artillery Battalion will combat possible enemy resistance in the neighborhood of Hill 70. However, in case the advance is rapid it should keep up close with the regiment. As soon as the bridge southwest of Offoy has been completed by the pioneers, the artillery battalion will immediately go into position on the southern side.

"I will be at the southwestern exit of Offoy tomorrow morning, and later at the railroad stop, one kilometer west of Offoy."

Thereupon, the artillery battalion commander decided to bring up the 8th Battery also during the night, into the position reconnoitered northwest of Offoy.

At about midnight, the battery commanders were informed by telephone from the battalion command post regarding the situation and the plan of attack for the following morning. The 8th Battery commander was ordered to go into the new position. He was taken along by automobile to the new position. Shortly after midnight, in a starlit but moonless night, a position which appeared suitable to a certain degree was found and assigned to the battery commander.

In the meantime, the 7th Battery had already commenced changing positions. Before midnight, it had taken up the new position north of Offoy. The 8th Battery commenced changing positions after midnight. At daybreak on 7 June, both batteries were in position near Offoy. The battery commanders were ordered to cross the Somme with the attacking units and get in touch with the artillery battalion commander at the railroad stop, one kilometer west of Offoy. There was some tension as to what amount of resistance the enemy would offer on the following morning.

Shortly before daybreak on 7 June additional units of the 2d Infantry Battalion crossed the Somme and the Somme Canal on inflated rubber rafts. Not a shot was fired by the enemy. Apparently the enemy had withdrawn. The bridge, however, was not completed until 8:00 AM.

At this point the 9th Battery was also brought up. It crossed the bridge and went into position on the other side.

Close to the railroad stop one kilometer southwest of Offoy and on the lane leading past it were craters from the artillery fire of the preceding evening. Directly behind the railway station a French position with field fortifications had been taken. Direct artillery hits had been registered there. A few dead Frenchmen were in the trenches. Articles of equipment, weapons, and rations that had been thrown away showed that the enemy had fled in haste.

Positions were quickly reconnoitered on the southern side. The batteries crossed the bridge that had just been completed. However, it was no longer necessary to go into position on the south side, because the infantry battalions were advancing without resistance toward Esmery Hallon. Liaison with the commander of the infantry regiment was reestablished.

The batteries advanced at a trot. They received the following verbal order:

"Keep marching! Pursuit! General direction Esmery Hallon!

"7th Battery will establish liaison with 1st Infantry Battalion; 8th Battery with 2d Infantry Battalion. In case of new enemy resistance, act independently."

The foremost (2d) infantry battalion reached Esmery Hallon and soon left the village at the southern edge in developed order. At this point, it was resisted by enemy machine-gun fire coming from the Bois de l'Hopital, two kilometers south of the town. The 8th Battery, following closely upon the heels of the 2d Infantry Battalion, was at this moment proceeding through the town with its point at the southern exit and rear at the northern exit north of the church. The 9th Battery was a short distance behind the 8th Battery.

The commander of the 8th Battery was informed as follows by the commander of the 2d Infantry Battalion at the southern exit of the village:

"Enemy machine guns are firing over there at the edge of Bois de l'Hopital. My companies have been held up for the present. The exact location of the indi-

vidual machine guns has not been established as yet. Take the edge of the forest under fire with your battery!"

At this instant a few rounds of enemy artillery projectiles fell in the village. It was impossible to turn around on the narrow streets. The battery commander decided to go into open position at the southern exit of the town with the foremost platoon.

The two guns were soon in firing position. Their fire was directed against the edge of the forest; at first with percussion fuze, and then with ricochets. The enemy did not take countermeasures and the machine-gun fire subsided. The battery was then ordered into covered position north of the village to establish an observation post at the southern exit.

At the same time the two guns of the 8th Battery had gone into position, the 9th Battery received the following order from the artillery battalion commander:

"Establish observation post on the church spire of Esmery Hallon! Firing position immediately north of the village, where the battery now is standing. Fire at enemy at northern edge of Bois de l'Hopital."

The battery was in firing position in about ten minutes. A telephone wire was laid immediately by motorcycle with side-car from the battery position to the church. Shortly after the two guns of the 8th Battery had opened fire, the projectiles of the 9th Battery whizzed over the village and detonated at the edge of the forest.

The 7th Battery was also ordered to go into position immediately north of Esmery Hallon, establish an observation post on the church spire, and direct harassing fire at the village of Freniches located one kilometer south of Bois de l'Hopital, where the enemy had presumably withdrawn.

The command posts of the infantry regiment and artillery battalion were close together in Esmery Hallon. The commander of the infantry regiment informed the artillery battalion that he had received orders not to continue the attack for the present. There was a pause in the fighting.

At 5:00 PM there was again a moment of sudden tension: "Enemy tanks!" From the northern edge of the Bois de l'Hopital a few French tanks were approaching at wide intervals across the grain fields. They approached to within 400 yards of the companies developed south of the village and opened fire with machine guns and cannon on the infantry lying in the open field, inflicting casualties.

From their observation posts, the battery commanders had seen the tanks approaching. It was scarcely necessary to give the order: "Enemy Tanks! Open fire!" At the same instant the first rounds left the guns. The impacts were near the tanks which turned and fled. They drove in zig-zag course toward the forest, pursued by artillery fire. It was not possible to register hits by indirect fire. Nevertheless, a few impacts were directly beside the tanks which forced them back into the woods.

Thereupon there was a pause in the fighting for the evening. During the night the artillery battalion was regrouped to support the attack of another infantry regiment on the following morning along the highway Guiscard-Noyon. (Guiscard is about six miles southwest of Ham; Noyon about 12½ miles southwest of Ham.)

The Tanks of the Soviet Army

[Translated from a German article by Heinz Bach in *Völkischer Beobachter*, 17 August 1941.]

In brief outline, let us give a survey of the various Soviet tanks insofar as they are making an appearance on the present front or have already been employed in Spain. They can be classified into three main groups. These are:

1. The N.P.P. group (neposredstvennaya podderzhka pekhoty = direct infantry support);
2. The D.P.P. group (dalney podderzhki pekhoty = long range infantry support);
3. The D.D. group (dalnevo deystvya = distant action).

The tactical employment intended for each group can be seen from the designations alone. The N.P.P. group is supposed to work in close cooperation with the infantry—a method used by the allies in their first tank battles during the World War. The task of the D.P.P. groups is to advance independently of the infantry; to run down the enemy's artillery positions; to crush the echeloned antitank forces in the rear of the main field of battle; to receive the counterthrust of enemy tank forces, in order to make the way clear for their own accompanying tank artillery, so that it can secure favorable fire positions and create confusion in the enemy's rear. This enables the D. D. group to thrust rapidly through the breach thus made and to advance with support of fighter planes, toward the enemy's supply routes and lines of communication to the rear.

So much for the theory. Just what has actually come from these ambitious plans is already part of history. The tanks described in the following were without exception developed from foreign patents and with the cooperation of foreign engineers and technicians.

Three types of tanks are in existence in the Soviet Union, and of these three only the heavy tank (Ford patent) is of interest. It was already in use in the Spanish War. It is built on a regular commercial chassis. Simple steering and no reverse gear are drawbacks from a military point of view which are only hypothetically counterbalanced by the possibility of simplified large scale production. Increased cross-country capacity is obtained by fastening caterpillar track on the rear wheels. This tank is one of those belonging to the D.D. group and is supposed to cooperate with the amphibious tank (Ford patent), which is welded throughout and is considered to have a high degree of cross-country maneuverability. The fast tank, "Christie-Russkiy 34," and similar types were intended to be the third weapon of the D.D. group; caterpillar vehicles whose performance seemed to fulfill modern requirements. The reality of war has meanwhile passed final judgment on them.

The superheavy breakthrough tanks were to be employed to force and extend a breakthrough, and their effect was supposed to be decisive in the battle. With what success

they were employed can be seen from the report of the press and weekly reviews. In building their heavy tanks the Soviets demanded speed, firepower, and security, and by making liberal use of foreign patents and methods they obtained these requirements. They were to be employed at a speed of 20 km/hr; and the fact that they were supported by fast tanks and by combat planes will give some idea of the difficulties that the German soldier has here and there to face and overcome!

The tank armament is variable, but in all cases it consists of several cannon, some heavy, and numerous machine guns and other automatic arms. Thus, for example, an 80-ton tank was mentioned that carried four cannon and eight machine guns. The TG-5/T-42 is driven by a 1400 h.p. diesel motor, with a temporary maximum output of 1600 h.p. The water-cooled diesel motor requires an additional diesel motor of 150 h.p. that merely supplies cold air.

The medium heavy tank TG-3/T-22 is built in several models which were developed from English models of similar type.

The next tank of this class was a 30-ton model, the TG-3/T-29. Then there followed a 52-ton model with correspondingly heavier armor and armament. But these monsters, too, burst under the hail of bombs of our luftwaffe and the defensive fire of German units of all branches of service.

One of the best known tanks in the medium class is the 6-ton tank "Vickers-Russkiy A.T. 26," which had already been used in Spain. Even this tank was patterned after an English model, as the name itself reveals. The armament of this tank is variable; sometimes with a revolving turret and 4.7-cm. cannon and a machine gun; with two turrets alongside each other, each with a machine gun; with a turret on the right side and a long 2-cm. cannon, etc. The weak armor or its unfavorable external lines was found fault with even on the basis of experience in Spain.

One of the most successful later models is the Soviet amphibious tank, "Vickers-Russkiy A.T. 33," which is more efficient than the English prototype.

We can see that the Bolshevists had made their tank forces a powerful military instrument, which—although at the cost of a tremendous sacrifice in national energy—at least numerically was a considerable factor; a military instrument which would have been engaged in full force if it had been faced with any other enemy but Germany. The daring German counterthrust, the superior German leadership, the bravery of German soldiers, and their courageous trait of not being disconcerted at anything even in unexpected situations have in a few weeks removed the nimbus from the Soviet tank units that Moscow propagandists have set about this force for so many years. A final judgment will not be possible until the end of the war; but one thing is clear—that machines alone, important as they are and however much they determine the appearance of modern war, are nothing without men who animate the machines and give them directions and striking power.

The Advance Upon and Capture of La Charite, 16 June 1940

["Gefechtsbericht über den Vormarsch nach und die Einnahme von La Charite am 16. 6. 1940," by Captain Mayer, German Army, in *Militär-Wochenblatt*, 8 August 1941. Translated and condensed at the Command and General Staff School.]

To march as an advance guard via Sens and Courtenay to La Charite and then to seize the bridge across the Loire was the mission of the 6th Company, 9th Reconnaissance Detachment on 16 June 1940.

When the company had reached a point some 3½ kilometers (about 2¼ miles) south of Vernoy, a messenger from the scout patrol along the route of the regimental advance reported that the latter had run into a barrier fortified by hostile tanks and antitank guns. I immediately sent this report to the commander of the detachment in the rear of the company and then went further on ahead in the direction of Courtenay.

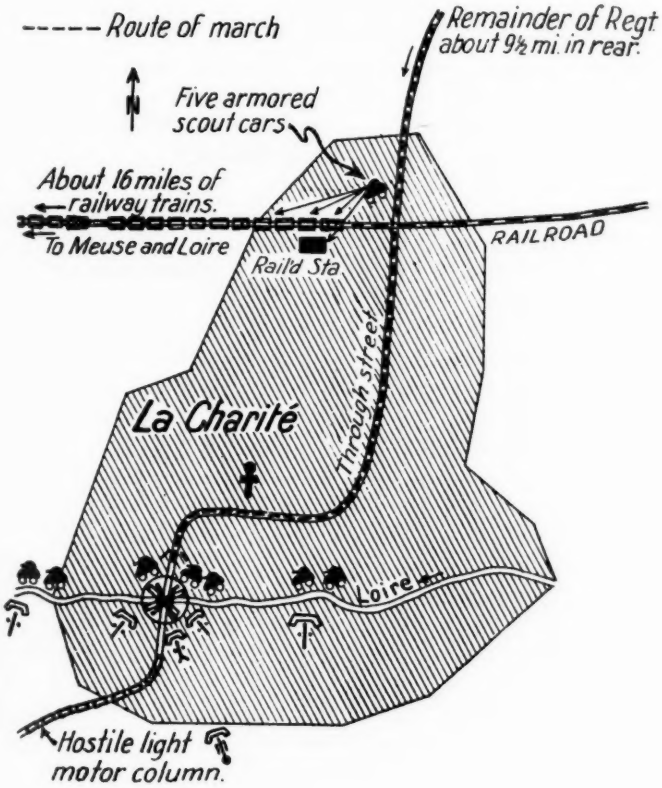
About 2 kilometers (approximately 1¼ miles) east of Courtenay, I ran onto the scouting patrol of Lieutenant Aicher, who reported hostile tanks advancing on the regiment from the direction of Courtenay.

On hearing this, I at once stopped the point of the armored column, placed the antiquated six-wheeled armored scout car crosswise, and three self-propelled cannon head-on on the highway for firing protection. I requested the loan of an antitank gun of the detachment's commanding officer, who had just arrived. I had the latter gun set up just ahead of the armored car. Then I started ahead on foot with the head tank gunner, had Lieutenant Wichert's armored scout car follow along behind me and, about 250 yards west of the highway, ran into hostile rifle fire which Lieutenant Wichert answered. After reporting this enemy contact, we started off again, crossed the railway tracks and proceeded clear to the outskirts of Courtenay where we ran onto a barrier guarded by antitank gun, tanks, and several soldiers. We released an effective fire on the enemy but suddenly there was hostile fire from the area some 700 yards north of Courtenay, to which we likewise replied.

In the meantime, Lieutenant Aicher had arrived and he, taking the place of Lieutenant Wichert, whose armored scout car had developed a jammed gun, did effective work against the enemy at the barrier and north of Courtenay. After the arrival of the detachment, the commander and I had reconnoitered on foot and learned that the enemy had retreated, we moved ahead to the barricade and found there an antitank gun and three hostile tanks. After clearing the barrier, we went into the town accompanied by several scout cars which had arrived in the meantime. On the west edge of Courtenay, we encountered another barricade made of improvised means, which we at once cleared away.

After leaving the west side of the town, we finally ran onto a truckload of French soldiers. We attacked them successfully, and continued on in our advance toward La Charite.

We were held up repeatedly by lines of refugees and hostile rifle troops, but were, however, able to reach the vicinity of Clamecy. Here, the leading armored scout car fell out due to a damaged motor and I took charge of the point of the column. The rest of the company with a strength of about 8 motorcycles and 10 or 12 scout cars followed this point. The detachment staff and the communication detachment of the 2nd Detachment followed behind these. A separation of 10 to 15 kilometers (about 6 to 9½ miles) had developed between the detachment staff and the company, due to our rate of speed—65 to 70 kilometers (40 to 44 miles) per hour. We had contact with only a few hostile pursuit planes, which twice dove down and fired on us with machine guns. We also encountered a few armed soldiers, whom we immediately took prisoner.



When the company was some 3 kilometers (about 2 miles) southwest of Nannay it was ordered to reach the piece of woods just north of Raveau and to reconnoiter toward the bridge across the Loire at La Charite. Accordingly, Sergeant Genck's scout patrol was given this mission while I returned to the detachment's command post near Chateauneuf. I there met the regimental commander who, after issuing the command, left personally to join the company in the neighborhood of Raveau. In the meantime, the scouting troop under Sergeant Genck had returned. It reported a hostile antitank gun at the railway crossing on the east edge of La Charite. At the same time I received the report that the leader of the scouting patrol had already gone ahead to reconnoiter in the direction of the railway crossing. On hearing this, I went ahead to the railway yards, and there found several passenger trains filled with French soldiers and an antitank gun, in position. In the meantime, the regimental commander ordered us to engage the soldiers in the trains and to capture the city and the bridge. We started off, therefore, with five armored scout cars toward the antitank gun. It retreated after a short fight. We then attacked the 100 to 200 soldiers in the train and went on into the city, along with the detachment commander, Captain Bentele, who had arrived in the meantime. There we shot a civilian who was about to light a barrel of benzine. As we arrived at the church, we heard an explosion. It came from the bridge, being blown up piecemeal. We were also successful in our engagements with groups of soldiers in the side streets.

As the leading car turned into the curve from which the bridge was visible, we saw three French soldiers and two civilians busy with sand bags. We fired on them, wounding two of them. We then went ahead to the bridge where we were fired on by several machine guns and rifle troops from across the river. We sent out security detachments into the streets leading to the north and south. We successfully engaged a moving column of hostile troops on the opposite side of the river. Two of their trucks were set afire and others were damaged. After a long battle at the bridge and an engagement with hostile artillery, we quieted the enemy across the river. Before dark, parts of the first detachment were sent across the Loire on the command of the regimental commander, who meanwhile had arrived at the bridge, and we succeeded in forming a bridgehead on the far side of the Loire.

The railroad tracks were blown up near the railway station that same evening. It was impossible for the troop trains to go farther. During the night, several other trains came in. There was combat between armed soldiers in these trains and a few of the security detachments. On the next day, 17 June 1940, the following were among results to be noted:

1. Troop trains, refugee trains and trains of war materials stood on tracks northward of La Charite to within a mile of Mesves. In the last-mentioned trains was found an enormous quantity of motor fuels, ammunition, infantry weapons, pioneer apparatus, aircraft camouflage, four apparently newly manufactured tanks, six cannon, railroad construction material, etc.

2. There were likewise troop trains, refugee and war material trains on the tracks from Mesves to Pouilly-sur-Loire in which also were found artillery ammunition and communication and other kinds of apparatus. French soldiers were on these trains with whom our souting troops engaged in combat with antitank and machine guns. During the course of 17 June 1940, they were forced to surrender and taken prisoner.

3. The total length of the trains extending northward from La Charite was estimated to be 20 to 25 kilometers (12½ to 15 miles).

Armored Forces

["Armate Corazzate," by General Horvath Sandor. Translated from *Rivista di Artiglieria e Genio*, (Italy), January 1941.]

Modern armies are equipped with so large a quantity of small arms, automatic weapons, "Granatwerfer" ("Stick" bomb throwers), and artillery, that the defense is able to deliver an extremely intense fire upon the terrain over which they advance. This makes it difficult for the attacking combatants, who must advance without protection, even if accompanied by the powerful support of their own artillery.

Military technique, organization, and tactics alternately give the advantage to the attacking force and to the defense. The defense now has a decided advantage, owing to the great depth to which it can develop its powerful fire and since it can quickly bring up its reserves to the most seriously threatened points, a process for which it can prepare during the slow and obstinately resisted advance of the attacking force.

The latter force must therefore advance quickly, so as to give the defense no time to make counterattacks. This can be done only by an armored attacking force, which, being invulnerable to fire and endowed with high speed, will be able to forestall any enemy counteroffensive.

How will the armored forces be employed? Will they act in close cooperation with infantry, or will they be capable of decisive action independent of infantry?

In the former case, the armored forces will be compelled to reduce their speed and check the impetus of the attack in order to advance at the same speed as does their infantry. While they will thus succeed in clearing the way for the infantry, they will not advance at the speed that is indispensable if a decision is to be reached.

One reason for adopting the latter method of employment, on the other hand, consists in the general consideration that it is expedient to employ an arm in such a way that it will be as effective as possible. Consequently, an armored force should never be tied down to its infantry so as to reduce its own speed, but should advance as far and as rapidly as its constructional characteristics will permit. We must also make it possible to utilize these characteristics by transporting infantry in armored vehicles and by imparting to artillery units all the speed permitted by the motor vehicles used.

According to this conception, the armored forces are no longer an auxiliary means used in a mass infantry attack, but are fast, independent units that are to intervene in a decisive manner, and are organized to comprise all the elements making them capable of independent action.

This concept does not exclude the expediency and possibility of assigning to infantry a detachment of armored cars capable of clearing the way for it at points where troops left behind by the armored forces are offering especially strong resistance.

A mixed armored force thus organized is now the most effective type of attacking unit, and is, wherever it is employed, the principal arm to whose requirements all other arms must conform.

According to General Guderian, Inspector of the German armored troops, armored forces must be employed in accordance with certain rules requiring the obtaining of surprise, mass employment, and the presence of a suitable terrain.

The element of surprise is of vital importance in obtaining a success. The factors in a surprise are speed, concealment or camouflage, and maintenance of secrecy.

The faster the armored forces the shorter is the time during which they act and the more difficult it is for their components to cooperate properly. Such forces must therefore be created in time of peace and be completely amalgamated in order that they may behave and function properly.

The secrecy relates not only to the activities of such forces on the battlefield, but must also be maintained concerning all matters relating to the organization and composition of the said force even before war has broken out.

In order to insure the mass employment suitable for accomplishing the missions assigned to an armored force, it may be divided into four echelons: the first echelon resolutely advances for the purpose of engaging the enemy's reserves and disorganizing or destroying his headquarters. The second echelon attacks the enemy artillery and antitank weapons that have remained active after the passage of the first echelon. The third echelon acts as an armored accompanying force, cooperating closely with the infantry and helping to clear the terrain of enemy infantry concealed along the line of attack.

Lastly, the fourth echelon is the reserve of the armored force. It gives further support to the first echelon, engages the enemy armored forces that may intervene later, and tries to weaken the strongest part of his front.

As will be seen, the first echelon is that on which the main burden rests, as it must keep the enemy armored forces engaged, at least until the main body of its own force has arrived. This echelon must therefore be strongly organized, and some of the heaviest armored units, armored artillery, and antitank units are attached to it.

The rule that an attack by an armored force must be developed on a favorable terrain is of capital importance. The mechanical means are capable of a given performance which is accurately known, and it is in vain to demand that they perform work beyond their capacity. The field of action will therefore be carefully studied and, if nature or the enemy has created obstacles rendering the terrain unsuited to the action of armored forces, no course remains except to conduct the attack without the assistance of such force, although its use may again be considered on reaching a terrain where it can be advantageously employed.

The armored force must be put in condition to effect the strategic and tactical reconnaissance, and to reconnoiter for the purpose of discovering the enemy's position. The first reconnaissance, which is effective only if executed at a great distance and at high speed, can be entrusted only to aircraft. The second is executed by fast armored cars, and the third by light tank units.

The main body of the reconnaissance troops of the armored force operates rapidly on the terrain in width and depth, with its different elements closely cooperating, and must instantly transmit any news obtained. These troops, also, must be well organized and have acquired a high degree of skill in time of peace.

The armored division may be called upon to attack permanent fortifications constructed in time of peace, or

to destroy fieldworks. In attacking fortifications of the first type, generally met only once in the course of a frontier operation, units consisting of heavy (40 tons) and very heavy (70-100 tons) tanks are needed. Such units are not assigned permanently to an armored division, which would be rendered too heavy by them. Its general organization, indeed, is based on the assumption that it will be used in destroying fieldworks.

An armored brigade, organized in accordance with the rules just explained, is composed of 2 tank regiments each consisting of 2 or 3 battalions. It comprises subdivisions of tanks equipped with machine guns and armor which is more or less effective, depending on the purposes for which the tanks are used. This armor is designed to protect them against the enemy antitank weapons, and partly, also, against armor-piercing weapons up to 500 meters.

The armament of the tanks is also of decisive importance. All of the latter are equipped with antitank guns whose caliber varies from 20-mm to 80-mm, depending on the mission assigned. The guns of larger caliber make them capable of resisting attacks of heavier enemy tanks.

The armored division also comprises a brigade of motorized riflemen who are assigned the mission usually given "fast" infantry, namely, that of following close behind the armored brigade to exploit its successes, preventing any counterattacks upon it, and enabling it to advance toward new objectives.

The artillery of the armored division must be capable of accompanying the armored brigade in its rapid attack, and of supporting the attack of the motorized rifle brigade. Consequently, it must also be capable of moving rapidly even off roads, be protected against infantry bullets having a steel core, and be ready to fire immediately.

It is extremely difficult to command such artillery. The time at its disposal is short, and its targets move rapidly and are constantly changing. It is therefore useless to speak of a fire plan or a central fire direction. Methods used by the old horse artillery, which, during action, boldly attacks the most dangerous objectives, usually from unprotected positions, would more likely be successful here.

The more rapidly an armored brigade moves, the more successful is its action. It is possible to consider an advance made without halting, at the maximum speed permitted by the terrain traversed by the brigade's various units, in order to penetrate the enemy's lines to their full depth and drive him out. This method cannot be employed unless losses can be disregarded and the enemy's defense proves weak. To be effectively protected from the enemy's fire, however, it will be necessary to plan an advance by bounds, because such protection can be obtained only during a halt.

Since it may be assumed that the enemy has not only selected the terrain most unfavorable for an attack by armored units in organizing his defense, but has also erected plenty of artificial obstacles capable of checking the advance, the armored division must be provided with engineer and sapper units capable of clearing the ground under the enemy's fire while protected by armor and equipped with special armored cars (mine removers, trucks carrying pontons, bridge-building equipment, flame-projectors, etc.).

Signal communication constitutes a most important task within the armored division, for the faster the latter advances, the greater is the danger that its units will get out of reach of the command during the movement.

During combat, signal communication can be effected only by radio. Since the detailed conduct (fire and movement) of a combat in which an armored division is engaged makes it necessary that the commander of every tank platoon be able to communicate with each tank by radio, one can readily see how many wave lengths will be necessary to have no disturbance of the communications between the different stations. An armored brigade comprises about 500 tanks. The situation is complicated by the fact that the enemy may use the same wave lengths. Consequently, ultra-short waves are used in the signal communication service of armored units.

Operations of the "Greater Germany" Infantry Regiment Near Sedan 13-14 May 1940

[Condensed at the Command and General Staff School from an article by Wolf Durian, German war correspondent, appearing in *Die Woche* 12 February 1941.]

A diary of a tank crew member at the end of this article gives a view of the some of the problems a tank commander may have in combat. The article itself reveals a disposition to withhold antitank-gun fire until the target is within 400-yards range and that such gun crews reluctantly give up a good position for a newer one, once they have started to fire. Assaults initially made by ground troops against bunkers are by specially trained and equipped personnel. When radio communication failed, motorized messengers were employed.—THE EDITOR.

I accompanied the 2d Battalion into Villers and joined Gun No. 5 of the armored assault battery, marching to Sedan on the Meuse. We were to force a crossing and clear the road toward the north for the oncoming panzer divisions.

Lieutenant Colonel Garski, commanding the 3d Battalion, had come forward by motorcycle on personal reconnaissance and learned that the crossing was being stubbornly defended by French artillery. His battalion was to follow as a second wave behind the 2d Battalion. He noticed pioneers pumping up pneumatic rafts near the river and decided to bring his battalion up from about a mile east.

The 3d Battalion vehicles were not available because of the troop congestion in the forest east of Sedan; but the battalion commander ran across some empty half-track armored troop carriers and ten minutes later he was shuttling his men to the river.

Only five rafts were available, but the current was slow and the river was only 50 yards wide so it required only a few strokes to cross.

The battalion commander kept things moving on the east bank while a captain on the other side started the troops toward their assault positions. After a few minutes, the battalion commander ordered a first lieutenant to superintend action on the east bank, while he moved to the other side relieving the captain to go forward to the assaulting position just west of Torcy, which, in turn, is just west of Sedan. The assault position was exposed to artillery fire.

A short distance from the assault position the battalion came under fire from a hostile bunker.

Sergeant-Major Preuss was a specialist in this work. Taking advantage of terrain, he crawled toward the first bunker. After a few minutes, he was on top where nobody could hit him. He showered his hand grenades into the loopholes and soon the bunker was silenced. The next bunker was taken under fire and 20 men stepped out with their hands up, still frightened from the effects of our dive bombers. The 4 bunkers which the 3d Battalion successively put out of action were intact. The moral effect of the dive-bomber attack had paralyzed the power of resistance of the bunker crews.

The battalion advancing rapidly could not wait for heavy weapons. Bunkers were approached with hand grenades and machine guns. If there was no response after several bursts of fire, the troops would advance to within calling distance and the battalion commander would command: "Get out immediately—or I'll burn you up!" The prisoners moved to the rear, unaccompanied, to get away from the fire of weapons.

The Meuse was crossed before dark. In the evening, the 3d Battalion dug in on the heights west of the captured bunker line.

Radio communications had failed so Colonel Garski mounted his motorcycle and reported to the regimental commander.

The regiment, in its advance west of the Meuse, was heavily engaged at Chemery. Here, Lieutenant Beck and his 14th Company (antitank) distinguished themselves. He shouted himself hoarse in the forest on the east bank of the Meuse where the column at times made slow progress. He used his motorcycle, where possible, or ran on foot.

Arriving at a point where he had been ordered by the regimental commander to lead two of his platoons, to be turned over to the two leading battalions, he found this placed under shell fire and at once looked for another point.

A few minutes later he saw his guns, now under battalion control, being loaded on pneumatic rafts. He stayed on the east bank but used the motor vehicles (prime movers), which had to remain behind, to bring up his two remaining platoons. During the night these two platoons and two machine-gun platoons crossed the Meuse on a recently completed bridge and halted in the ruins of a village.

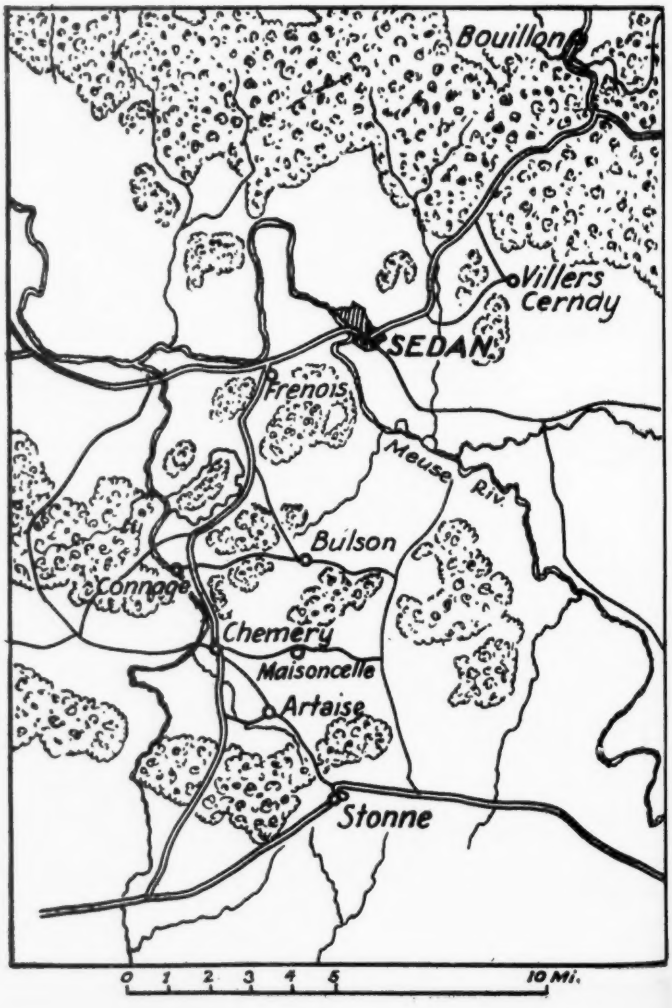
Just before the regiment resumed its advance, Lieutenant Beck was ordered by a regimental staff officer: "Cover the advance of the 1st Battalion on Bulson." After a search, he discovered the battalion in marching column on the heights south of Frenois, at the Chemery—Bulson road-fork. Arriving there, the lieutenant started to take the Bulson road, but he was halted by an officer who stated: "The general is of the opinion that Chemery is occupied by only weak enemy forces. Three of our armored scout cars are halted a little farther down the road. We are driving to Chemery. You follow the armored cars."

When he arrived at the southern edge of Frenois, the armored scout cars and infantry were out of sight. It was necessary to lay planks and logs over the shell and bomb craters in order to move the antitank guns through the streets. However, they continued toward Chemery.

They soon encountered machine-gun fire and took cover in the roadside ditch. French cavalry emerged from the wooded heights to their left front. After a few shots from two machine guns, the cavalry disappeared.

On the right front, ten French tanks moved out on the road from a clump of willows some 900 yards away. All six antitank guns were put in position, the gunners taking careful aim on the tanks assigned to them. The unsuspecting tanks continued to move ahead. When the tanks arrived within 440 yards, all six guns fired simultaneously on command. Five tanks stopped, the others turned to escape. The antitank guns continued to fire and none of the tanks reached the protective willows.

The lieutenant studied his map to determine whence the tanks came and where they intended to go. Apparently they came from Connage, evading the Germans advancing on the west bank of the Meuse, and were moving in the direction of Frenois to place themselves between the Ger-



mans and the river. He concluded that this was a French counterattack and probably more tanks would appear.

A column was heard approaching on the road from the north. It was the other two platoons of the 14th Company. There were now 12 antitank guns at hand. As expected, more tanks appeared. A large tank was hit in its track and again in its side. The doors opened and the crew jumped out.

Our pioneer battalion drove up in trucks and the lieutenant was ordered to support the assault of Chemery by protecting the right flank from tank attack.

Additional tanks appeared moving toward Chemery into the flank of the pioneer battalion. The antitank guns had to move ahead on the road, firing at the same time, even while exposed to enemy fire. Gun crews are reluctant to give up a good position and move to a new one; but for two hours they echeloned forward. At the end of the engagement, the lieutenant found that he had disabled 44 tanks, large and small.

A Tank Gunner's Diary

The following is taken from the diary of an assistant gunner in a German tank, participating in the action against Bulson:

"We were the first tank to cross the Meuse in our sector, crossing at 3:00 AM. We climbed the heights on the west bank and drove past an abandoned fortified French position. The guns were still in place, but deserted. Our dive bombers had done their work.

"Then we had bad luck. Two big rolls of barbed wire became tangled in our tracks. After hard work we cut it away and continued toward the front.

"North of Bulson we were fired on by machine guns, antitank guns and artillery. Dirt flew into our eyeslits. Our tank commander reported to the platoon commander.

"We had to move from one fire position to another, where we fired a few rounds with good effect. The enemy retreated. We moved into Bulson which was shot to pieces. Telegraph wires dangled all around.

"Our dive bombers were busy. The French were only 600-700 yards ahead. One bomb dropped on a farm building just in our rear. Bricks and plaster hit our tank.

"We pushed ahead toward Maisoncelle. A valley lay to our front. Artaise was burning on our right. On our left were the heights of Stonne.

"At 2:30 AM, 15 May, we formed for the next engagement. We passed through Artaise, our assault pioneers having taken the heights in quick time.

"We ran down two machine guns, silenced one sniper hiding in a tree. Then we had to return to Artaise to repair our brakes. At the village exit a pioneer officer informed us his troops were receiving machine-gun fire. We silenced this gun. We were hardly in the village when the same officer pointed out another machine gun which we silenced. Suddenly our tank stopped. There we were exposed broadside to the enemy—out of gas.

"We jumped out into a ditch. The tank commander soon brought 20 liters of gas which he obtained from the pioneers. One of our light tanks drove up and towed us to cover where we refueled.

"We returned to Artaise and learned that our regiment was to be withdrawn for three days' rest."

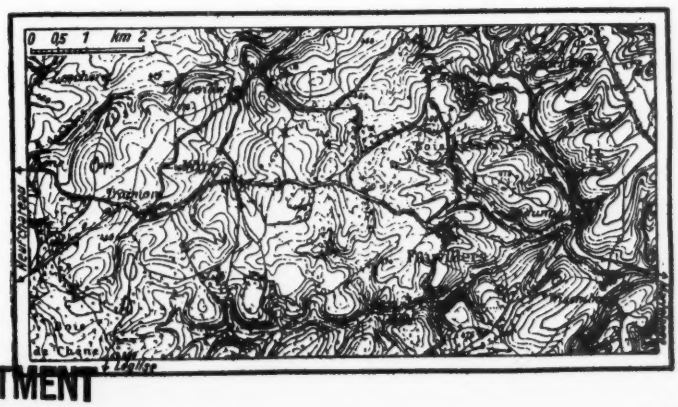
Air-Landing Troop Action in Belgium 10 May 1940

["Luftlandeinsatz in Belgien am 10. Mai," an article which appeared in the June 1941 *Militärwissenschaftliche Rundschau* (German). Condensed at the Command and General Staff School.]

The use of air-landed troops in this action is of interest in that the sector of the tank division's advance was through the Ardennes Forest west of Neufchateau and across the defenses at Sedan. Not to be slowed down too much by these obstacles and to enable it to keep abreast with adjacent panzer divisions, air-landed troops appear to have lent considerable assistance to this tank division's advance. The methodical procedure of determining by reconnaissance and intelligence reports that air-landing was feasible and then systematically carrying out a plan, after the initial landing, of reconnaissance, telephone wire cutting, blocking of hostile withdrawal routes, air reconnaissance and the latest operation as units are all to be noted in this article.—THE EDITOR.

The first flight took off just at daylight, 10 May 1940, after overcoming the difficulties incident to starting from an unfamiliar field with a heavy load during the uncertain light at dawn. The night at our flying field had been spent in preparation for this day.

The air-landing troop commander with a small group was the first to land at the selected point near Witry, 15 miles northwest of Arlon, in southern Belgium. While waiting for the arrival of additional reinforcements, he and his small group reconnoitered the nearby terrain, cut telephone lines, blocked the road leading through Neufchateau to the French border, and captured a few prisoners.



WAR DEPARTMENT
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Other aircraft landed at Leglise, 5 miles southwest of Witry. The troops landing there at first operated independently. Surprise, the most important factor in such a mission, was obtained.

The second flight started after sunrise. The landing, unloading, and distribution of ammunition and equipment was completed in less than a minute, as in drill.

Squads and platoons were rapidly assembled, while the company commanders obtained the situation from the battalion commander. Squads were sent out to their designated covering positions and kept the terrain under constant observation with field glasses. They saw a hostile bicycle reconnaissance patrol but, after a brief fire fight at long range, it disappeared.

These squads reported dozens of aircraft landing and taking off from nearby heights and observed the landing troops as they deployed and advanced to their positions.

The next few hours afforded some relaxation, since the designated positions were occupied, the most important roads were blocked by our pioneers and patrols were sent to continue the reconnaissance and trail down any hostile groups still lurking in the vicinity.

One of our reconnaissance planes continually circled above us in the clear sky, like a shepherd dog watching its flock.

A brief fire fight flared up in the 1st Platoon where a squad had to defend itself against a tank suddenly emerging from the woods. The tank turned around and disappeared again before we brought our antitank weapons into action.

Towards noon, we started to advance east against the defensive installations on the Belgium-Luxembourg border to break any resistance there by an attack from the rear. A short stop was made east of the village of Witry to pick up the detachments landed at Leglise. A reconnaissance plane dropped the report that our own tank troops had already broken through the frontier defenses and that their foremost elements were only about three miles east of us. We continued the march eastward on the road to Fauvillers. Our point encountered resistance a little farther east of Witry where Ardennes riflemen suddenly fired from the edge of a woods, a hedge and a house along the road. After a sharp engagement, the enemy was driven off, leaving several dead, wounded and prisoners behind. As the last shots were being fired in this encounter, we heard the call: "Hostile tanks in front of us!" The leading hostile reconnaissance car was put out of action by an antitank rifleman in the 11th Company. The crew in this reconnaissance car took to flight and the other cars turned around.

Fauvillers was reached without further resistance. After passing through the village we encountered our own troops approaching from an easterly direction. Contact was established by waving signal flags. With this, our mission was accomplished.

Sixth Pioneer Battalion in the Attack Over the Lower Seine

[Translated from an article appearing in the *Militär Wochenblatt* (German) 30 August 1940. Condensed at the Command and General Staff School.]

"The division, reinforced, is to send out advance detachments to seize bridgeheads over the Seine at Ande, Les Andelys and Courcelles. The mass of the infantry will reach the Seine today. Every officer and man must give his utmost to the end that this last decisive objective is attained." So read the division order early on the morning of 9 June.

To the engineers, this order meant: the bridges over the Seine must be taken before the enemy has time to demolish them. At the same time, it was necessary to push ahead the floating equipage, against the chance that the bridges might not be taken intact. At the moment, the engineers were engaged chiefly in removing mines from roads behind the division, and in repairing culverts and bridges on those roads. Now, again there was action. Again it was a case of engineers to the front!

A motorized scout detachment sent out by the engineer battalion was the first unit to reach the Seine. The battalion commander, Lieutenant Wiese, had accompanied the detachment in order to make personal reconnaissance of the situation at the river. As he drove into Les Andelys, he saw before him the great suspension bridge, intact. Meanwhile, the remainder of the detachment had been overcoming enemy resistance, and had been forced to take another route. The colonel and his car were on the spot, alone. Under these circumstances, he decided to take his party, including an ordnance officer and a striker, and seize the bridge himself. This small group was not able immediately to overpower a bridge guard which was entrenched behind a road block. In the hand-to-hand fight which followed, two Frenchmen were put out of action by means of hand grenades, and the third turned to run back across the bridge. The striker had been killed. The colonel and his staff officer climbed over the barricade and started to follow the Frenchman out onto the bridge, when, with a deafening crash, it collapsed.

While this engagement was in progress, the division reconnaissance detachment had reached the river, and was clearing the near bank of enemy resistance. The 3d Engineer Company (motorized) had traveled with the reconnaissance detachment and immediately set about reconnoitering ferry sites. Meanwhile, the infantry regiments were approaching the river. Every last motor vehicle had been pressed into use for transporting the infantry. Some of the vehicles of the 3d Engineer Company were diverted to that purpose, as were all the vehicles of the equipment train. The loads of the latter vehicles had been dumped. As a result of these emergency measures, by dark the near bank had been occupied in force.

The division order required that the bend of the Seine be cut, and a bridgehead established along the line of the Rouen-Paris road, from St. Etienne to Gaillon. This was accomplished after a short engagement. Shortly thereafter, one platoon of the 3d Engineer Company established a vehicle ferry, using civilian equipment, near Muids. An-

other platoon of the same company, established a vehicle ferry, using pneumatic boats, near Mousseaux.

The bridge column moved up to Les Andelys. Despite difficulties, it had kept well ahead of the infantry, and now had the distinction of being the first German bridge column to reach the Seine. Thus, it was possible to have in operation a standard outboard-motor ferry as soon as the others were in operation. This standard ferry was operated near Les Andelys by the third platoon of the 3d Engineer Company.

The 2d Engineer Company was given the mission of ferrying across an infantry regiment near Herqueville. The company was transported to the site by tractor-carriers. In this case, time was highly important, since the regiment in question was to furnish the flank guard for the bridgehead. This consideration had influenced the company commander to rush on ahead in order to reconnoiter the ground personally. He was shot through the heart, while standing on the river bank, field glasses glued to his eyes.

In the face of strong enemy fire, the 2d Company ferried the infantry units across—first in pneumatic boats, and later on ferries made from pneumatic boats. By morning, the company was able to improvise landing ramps and to put in operation a ferry made from civilian equipment, including a motor boat.

The 1st Engineer Company initially was employed in assisting the ferry operation near Les Andelys. During the night, this company built the landing ramps for an 8-ton bridge, 200 yards upstream from the demolished bridge.

During the construction of the 8-ton bridge, the battalion was assisted by a corps engineer battalion. The commanding officer of the latter was given charge of the bridge construction. Due to his energetic leadership, the bridge was completed by 1:30 PM, 10 June. Great difficulties were experienced in getting the equipage down to the bridge site.

The 1st Engineer Company took over the operation and maintenance of the bridge. The enemy realized fully the significance of the bridgehead, and left nothing undone to reduce it through air attacks. About once every two hours, British bombers came over; but they never were able to damage the bridge. However, early on the morning of 10 June, an officer was killed by a splinter from a bomb which fell in the neighborhood of the bridge. The second officer casualty on the Seine! Only three days before a lieutenant had been decorated for heroism on the Somme.

During following days, the battalion operated the ferries at Herqueville, Muids, and Mousseaux; and the bridge at Les Andelys. In addition, it assisted a corps engineer battalion in constructing a 16-ton bridge at Courcelles, and also assisted another division battalion in constructing an 8-ton bridge 13 km (about 8 miles) upstream, near Vernon (not shown on map).

At the news of the fall of Paris, the battalion moved out, marched through the French capital city and on south across the Loire.

The Battle of Verdun on the East Bank of the Meuse and the Capture of Vaux and Douaumont Forts by the 211th Infantry on 15 June

["Der Kampf um Verdun auf dem Ostufer der Maas und die Einnahme der Forts Vaux und Douaumont durch Infanterie-Regiment 211 am 15. Juni" in *Militärwissenschaftliche Rundschau*, June 1941. Translated from the German and condensed at the Command and General Staff School.]

On 14 June the division was approaching the northern front of the fortified zone of Verdun, on the east bank of the Meuse.

After capturing the bitterly defended village of Samogneux and Hill 344 east of there during midday the infantry attack was continued with artillery, toward the Cote de Talou and the hill located to the northeast of it. In spite of stiff hostile resistance and serious flanking fire from the west bank of the Meuse which did not let up till 7:00 PM, the attack objective was reached at 4:00 PM. This gave us a clear view of Verdun.

During midday the 211th Infantry has reached Azannes and orders the 2d Battalion, on the right, to attack in the direction of Fort Douaumont; the 1st Battalion, on the left, to proceed in the direction of Fort Vaux, supported by several artillery detachments. The enemy defends in skillfully constructed field positions organized in sectors, at Azannes, Gremilly and, southwest of Ornes. At Azannes, the 2d Battalion takes seven officers and 200 men prisoner.

As soon as the destroyed bridge at Ornes has been passed, the 2d Battalion (alone to begin with, then in company with the 1st Battalion) throws the enemy back at Ornes to the wooded hillside position at Bezonvaux. At 9:00 PM the regiment starts an attack on this position, supported by three artillery units. After bitter and costly fighting, it takes the ridges north of Fort Douaumont and Fort Vaux.

By evening of 14 June, we have won locations favorable as points of departure in the planned attack on the line of the Verdun fortifications east of the Meuse.

That very evening division orders are issued to dispatch capable shock troops and pioneers early next morning against Bras and, via the Cote du Poivre, against the Cote de Froide Terre and Fort Douaumont.

The regiments are ordered to take advantage of every opportunity offered for the bringing up of larger forces as quickly as possible and for the improvement of successive points of departure against the enemy's strong points and forts.

Early on 15 June, the 211th Infantry, with the 2d Battalion on the right attacking Fort Douaumont and the 1st Battalion on the left engaged against Fort Vaux, continues its attack of the previous evening on the bitterly contended heights of Bezonvaux, with the Verdun-Etain highway as the objective. The 3d Battalion is given the assignment of combing the country in a southerly direction in the broad gap between the regiment on the right and the 211th Regiment in order to avoid a flanking threat. The divisional artillery unit is to push ahead past Dieppe as far as the Verdun-Etain highway to secure the east flank of the 211th Regiment near Eix.

On the left wing of the 1st Battalion, one platoon of the 1st Company pushes rapidly forward, taking advantage of the Vaux-Damloup railway embankment, against the armored turret of Fort Vaux.

At 8:20 AM a casemate fires but is silenced by the engagement of two light machine guns. On orders of the company commander to surrender, they comply and two officers and 160 men are taken prisoner and four cannon, four machine guns, 120 rifles and 30,000 rounds of ammunition are taken. As a result, Fort Vaux is in German hands at 9:12 AM.

Hostile defense is more vigorous in the 2d Battalion's sector. The hostile force is still located here in well developed field positions in front of the fort, and is defending stubbornly. Finally the enemy's resistance is broken, thanks to the excellent artillery support, the spirited work of the various companies and last but not least, the vigorous and fearless leadership of the battalion commander, a hero of Verdun in the World War. The 2d Battalion reaches Hardoumont, first by way of the Hassoule draw, where two officers and 64 men are taken prisoner. At 11:45 AM, it arrives at Fort Douaumont, which is taken by storm under the personal leadership of the battalion commander.

After battle reconnaissance reveals on the morning of 15 June that Hill 342, the famous Cote du Poivre of the World War, has been abandoned by the enemy during the night, shock troops of the regiment on the right reach Bras and the Bras-Louvemont highway without serious resistance by the enemy. The immediate pursuit of the enemy to Belleville is then begun in the direction of Verdun along the Vacherauville-Bras-Verdun highway and by way of the Cote du Poivre and Fort Froide Terre.

At about 10:00 AM, the stretch of forest about 1 kilometer (one-half mile) northwest of Belleville is reached under the fire of Forts Froide Terre and Vacherauville. From this point, a combat group advances over the highway toward Belleville and after a brief resistance in this place, at 11:30 AM, arrives at the northern edge of Verdun. Other forces follow.

They succeed in crossing the Meuse into the city over the wrecked bridge. The combat group follows the main street and, at 12:30 PM, reaches the citadel and occupies it. A few French are surprised in their business places and are taken prisoner.

The mission which the division commander had given his advance detachment verbally on 13 June and again in the night of the 14th by radio, viz., to take the citadel of Verdun, was attained by this action, on 15 June at 12:30 PM.

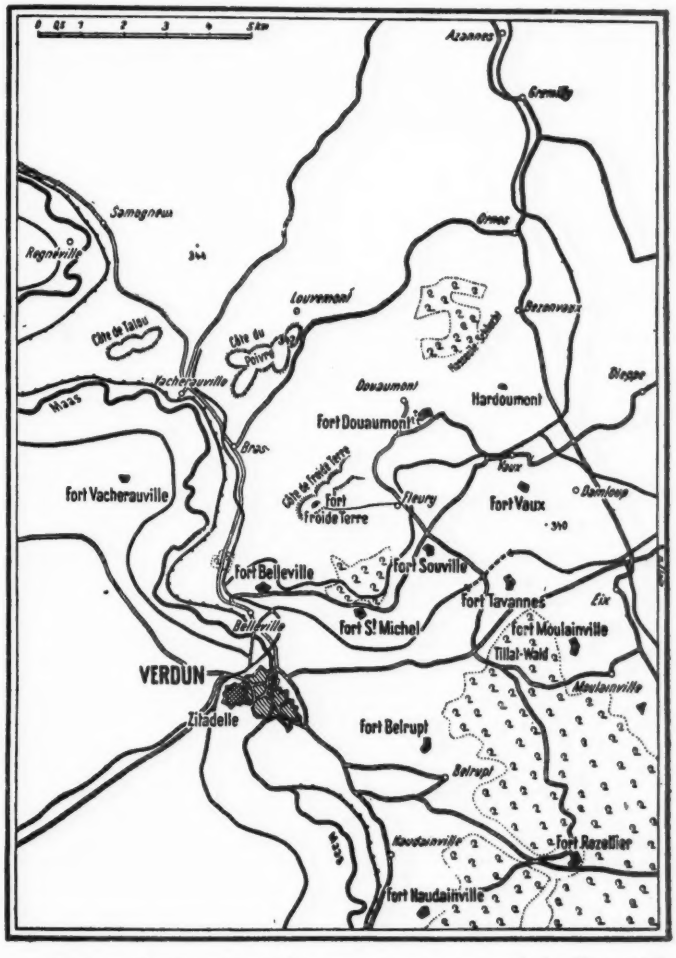
In the meantime a temporary bridge has been constructed for antitank cannon along side the wrecked Meuse bridge so that it is possible to bring heavy weapons up to strengthen our position in the citadel.

During this time, Fort Froide Terre still offers stubborn resistance. The fort's artillery fire, which has been sweeping the highway to the south of Bras, since 10:00 AM, increases in intensity during the forenoon so that we suffer no inconsiderable amount of casualties. The enemy in the fort is shooting at every vehicle on the highway.

We are only able to get our breath here when the fort is stormed from the east side. A battalion, placed in support of the 211th Infantry, receives the oral command at 9:00 AM, from the division commander to form an advanced detachment with an antitank company and to break through westward of the position of the regiment, to the citadel of Verdun.

The battalion itself, pushing past the right of the 2d Battalion of the 211th Infantry, is directed against Forts Souville and Saint Michel in order to reach the northeast corner of Verdun, on the Verdun-Etain highway, behind the advance detachment. The battalion thrusts forward along past the cemetery west of Fort Douaumont and, at 12:15 PM, wipes out weak hostile resistance near the former village of Fleury. Along the southwest edge of the cemetery there is fire for a short time from Fort Froide Terre.

At 1:00 PM, the battalion commander decided to send a company, reinforced by an armored scouting troop, against the fort. The attack is to be carried to the fort from the rear, along the highway from the southwest corner of the cemetery. The company advances on both sides of the highway secured by the two antitank guns of the scouting troop, which quickly reaches the entrance to the entrance to the fort, takes up position there and opens fire on armored cupolas and casemate entrances.



Determined men of the company now rush to the artillery and machine-gun turrets, which are firing in a northerly direction, and throw hand grenades into the ports. After our troops have penetrated into the courts of the fortresses and broken in some of the casemate entrances by means of hand grenades, the crew of 3 officers and 150 men surrender at 2:00 PM. We seize the armament of two disappearing antitank gun turrets, two rapid-fire cannon mounted in embrasures and numerous machine guns with equipment and ammunition.

While the Company is attacking and capturing Fort Froide Terre, the battalion itself drives on beyond Fleury, at 2:00 PM, occupies Fort Souville and, at 2:15, Fort Saint Michel. At the same time, the advance detachment, now on motor trucks, reaches Verdun and pushes on through to the south edge of the city. The battalion is assigned Fort Belrupt as its next objective in order to take up there the security of the south front on both sides of the fort at Verdun and to

form a reserve for further reconnaissance. Resistance in the intermediate area is broken; the fort is reached at 4:30 PM.

After the storming of Fort Douaumont by the 2d Battalion and of Fort Vaux by the 1st Battalion of the 211th Infantry, both battalions press on to the south. During the evening, Fort Tavannes having been seized at 2:00 PM by the 1st Company operating from Fort Vaux, they reach the Verdun-Etain highway in the face of only weak hostile resistance and take over the task of furnishing security toward the south and southwest with the 2d Battalion in the east part of Verdun and the 1st Battalion at the intersection of the highways 2 kilometers (about 1¼ miles) southwest of Fort Tavannes.

At about 5:00 PM, the 1st Battalion reports that there is still a hostile armored fortification in the vicinity of Hill 340 which is keeping the Ornes-Damloup-Eix highway under fire. A like report comes in shortly from the division artillery unit which has reached Damloup to secure the east flank and has observed hostile movements to the rear at Aix and Moulinville. A strong combat group, reinforced by a group of pioneers, is made up out of the 3d Company of the 1st Battalion and assigned the mission of attacking this armored cupola. A French prisoner is sent in front of the fortification with a lance corporal to demand surrender of its crew. This is refused. Fire is immediately opened on the embrasures while the pioneer group advances on the bunker and tosses charges of explosives through the embrasures, whereupon a white flag goes up. But the demand that they leave the fortification is answered by a new burst of machine-gun fire.

After a prolonged fire from all the weapons of the combat group, the enemy comes out of the fortification. The crew of one officer and 68 men is made prisoner, and the fortification occupied.

During the evening, a mixed detachment leaves Verdun and attacks Fort Haudainville. At 9:00 PM, the city of Haudainville, at 10:30 PM, the fort itself and the borders of the forest to the south are taken after a hard fight. Fort Rozellier is also occupied during the night. In this location, a shock troop, which was advancing, ran into such strong machine-gun fire coming from the edges of the woods on both sides of the intersection, one and a half kilometers (about one mile) west of the Fort, that it was unable to return. The battalion near Fort Belrupt is ordered to take Fort Rozellier during the night, to use available troops quickly. A reinforced company is assigned this mission and starts out from Fort Belrupt. After the enemy has been routed from his field positions along the edge of the forest west of Fort Rozellier, the fort is successfully attacked with artillery support which holds off flanking fire from the borders of the forest. At 2:15 AM, on 15 June, it falls into the Company's hands, evacuated just shortly before.

The fort is now occupied and security is established in front. A hostile counterattack, attempted at about 4:15 AM, gives way under the company's fire. Good use is made during this attack of captured French machine guns. This fort, built before the World War, is armed with four disappearing, armored turrets, two for cannon and two for machine guns, with two built-in 150-mm guns and numerous machine guns, supplies and ammunition.

Two battalions of the adjoining division on the left are assigned the mission of securing the 211th Infantry's open left flank. These are to arrive in Damloup by 4:00 PM. They are to be placed in action on the left wing against Fort Moulainville and the village of Eix. Later in the afternoon, the two Battalions move forward along the Verdun-Etain highway and hurl back weak hostile resistance north of and on both sides of Fort Moulainville. The fort itself falls into their hands without fighting. At 3:00 AM, on 16 June the line is reached along Tillat forest, the south edge of Fort Moulainville and a point one kilometer (about one-half mile) south of Eix.

Thus, on 16 June, the Verdun front east of the Meuse is taken, the city itself occupied.

In spite of the heavy blows given it during the previous days, the enemy was determined, as is evident from orders and statements by prisoners, to defend the fortress of Verdun and the forts whose value had been proven in the World War, to the end, as a symbol of the invincible resistance of the French army. But in spite of all its forts, Verdun fell in a single day by the bold strategy of the Command, the resolute energy of individual combat units and above all by the outstanding attack force of infantry, supported by other arms.

Tanks in Combat. Breaking Through the Weygand Line 5 June 1940

[This article is taken from a series appearing in the *Deutsche Allgemeine Zeitung*, written by Sergeant Major Robert Thevoz, a tank commander in the action which he describes. Condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

Careful and thorough reconnaissance was made prior to the tank action described here, no doubt down to the company commanders. Artillery preparation fire, it will be noted, is employed and 15 minutes after it starts the tanks go into readiness for the attack. In this engagement, the tank objective is six miles beyond the German front line. Tanks circumvent towns and fire into their edges as they pass by. Apparently only the general direction of their routes is given commanders, without boundaries. When repairs need be made during action in the field, friendly tanks stand by to neutralize hostile fire.—THE EDITOR.

Our regiment marched via the road: Moislains—the temporary pioneer bridge at Clery—Feuilleres, five miles west of Peronne, to its position of readiness east of the road: Feuilleres—Assevillers. This was during the night of 4-5 June, 1940.

Just before daylight, at 3:00 AM, our company arrived at its designated area in the regimental position of readiness. Behind us lay the Somme lowland and in front stretched the crest of the smooth ridge, the distant, southern slope of which was under hostile observation. Immediately upon arriving under cover of this bridge, we established local security, then we refueled and ate breakfast.

At 4:30 AM, the captain, in a low voice, gave last-minute instructions as follows: "The 2d Battalion constitutes the leading echelon, and our 1st Battalion is the second echelon of the regiment in its attack against the Weygand position. The 4th Company will be the foremost unit of our battalion in its attack against the railroad installations in the small town of Chaulnes, the initial battalion objective." (Chaulnes was approximately 6 miles from the German front line at that time.)

Careful preparations had been made for this attack. Powerful artillery had been placed in position and the terrain had been reconnoitered by the company commanders during the preceding days of rest. Exactly at 4:45 AM, the initial barrages of the German batteries broke loose against the enemy lines. Their flashes flared up behind us as far as we could see. The thundering shots from the rows of guns lined up immediately behind us shook the air for a quarter of an hour and inspired us with confidence during the last few minutes before the attack.

At sunrise, 5:00 AM, the tanks lined up for attack. The villages within the zone of attack were passed by on the right and left. We passed through our foremost foot elements at Assevillers, approximately 4,000 yards from the tank company's position of readiness, and soon thereafter we were in contact with the enemy. At Belloy we encountered machine-gun and rifle fire, but our tanks continued their rapid advance, firing upon the edge of the village as we passed around it, without deviating from our direction of attack. Driving cross-country, we pushed on to the Roman Road which ran across our direction of attack. As soon as the two roadside ditches and the broad asphalted highway had been crossed, we arrived at Estree on the enemy's main battle line.

Estree itself had been transformed into a small fortress where antitank guns had taken up positions, firing through small holes in the walls of the buildings. The hostile infantry was concealed in cleverly camouflaged positions and miniature armor-covered bunkers. This resistance was overcome by the 2d Battalion, advancing in the first echelon. However, after the tanks passed over, this resistance was renewed and the following infantry could only make slow progress here against heavy fire. From now on, every village and small woods had been transformed into strong nests of resistance from which we encountered fire from antitank guns.

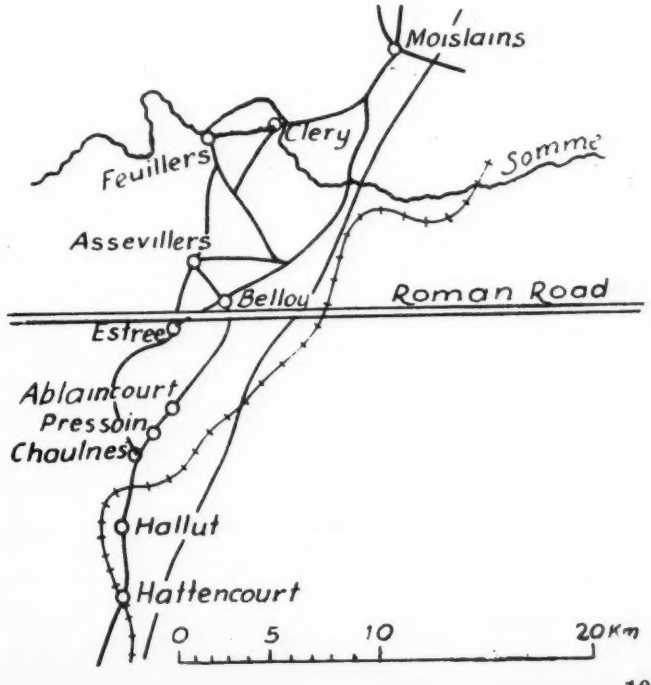
Then the tanks approached the decisive battle zone. The captain's warning voice resounded repeatedly through our earphones calling attention to the enemy's artillery positions.

On the horizon four to five kilometers (or about 2½ to 3 miles) ahead of us we suddenly saw innumerable muzzle blasts from hostile artillery. Immediately thereafter the leading echelon was enveloped in shell bursts. The advance continued without slowing up. The leading echelon shifted to the left to avoid this artillery fire. The 1st Battalion, moving in a southwesterly direction, pushed past Ablaincourt and Pressoin.

A mighty battle scene was then presented to the participants. In front of us, the 2d Battalion, continually advancing, overran the enemy artillery, some pieces of which were already firing directly at our tanks. Some crews abandoned their pieces due to the rapid rate at which the foremost tanks in our battalion were advancing towards them. In the foreground and on the flanks of our advancing tanks the tracer trajectories of projectiles from German tanks and French antitank guns crossed each other. Three tanks from my company were hit by French 25-mm antitank projectiles, but no losses occurred . . . soon the decisive encounter between our advancing tanks and, perhaps, even heavy artillery came to an end. In the 4th Company, we soon found ourselves the foremost company in the leading echelon. We put several pieces of artillery and antitank guns out of action at the stubbornly defended edge of Chaulnes and then moved around the western edge of town to the railroad station south of it.

The tracks in the railroad yard were quite an obstacle and the assault formation of the company became so disorganized that we could not be reformed until we arrived at the ridge south of Hallut, where we took up a covering position towards the south, 300 yards north of Hattencourt.

By noon we had already passed our objective, but artillery and antitank guns in Hattencourt were firing at us in the 4th Company, and at the battalion staff in front of us. In accordance with orders, we moved about 100 yards towards the rear, whereby the battalion adjutant's tank fell into a hole about 4 meters deep. The battalion commander's tank bellied down at the edge of the hole. Inasmuch as the salvage work was hindered by well-aimed rifle fire from Hattencourt, our heavy tanks were used to drag these tanks out of the hole. At the same time two other heavy tanks from the 4th Company drove towards Hattencourt and swept the edge of the village with machine-gun fire. One tank pushed on into the village and brought down several enemy riflemen, but it encountered a barricade and had to turn back. In the meantime, the other tank, while observing the edge of the village, received a hit on its turret from a 25-mm antitank gun, without severe damage. Since a third heavy tank was needed for the salvage work at the hole and since the tank



that drove into the village had a damaged gear, the platoon commander's tank eventually assisted in this task. At last the two tanks were pulled out of the hole.

In the meantime, the battalion light platoon commander had discovered the hostile sharpshooter who was hindering the salvage work with well-aimed fire, through an opening in the roof of a house in the village. This fire was silenced by one round from the platoon commander's tank weapon.

Our company advanced farther south and southwest. In the evening, we received heavy fire from French artillery on our front, and also on our flanks that had not yet been rolled up by our deep tank thrust to the south.

At 10:30 PM, our company, less two heavy tanks, was withdrawn to protect Hallut, but two heavy tanks continued to cover towards the south until 2:00 PM the next day, taking some prisoners in the meanwhile.

The combat echelon remained cut off from all connection to the rear during the night because the foot troops were unable to reach the tanks. Hence, urgently needed supplies could not be transported to the front. Transportation was desired to bring up several hundred shells and several thousand rounds of machine-gun ammunition, and carry back the battalion wounded.

The experiences of two corporals, a commander and a driver of a machine-gun tank, give a vivid picture of the events occurring later. After crossing the Roman Road and entering the enemy's main battle position, they furnished protection for another machine-gun tank that lost its track when it had been rammed by a heavy tank. The repair work was completed under hostile fire. While on this mission, the one corporal's tank put two enemy machine-gun nests out of action and thus assisted the riflemen to cross the Roman Road. After the track was repaired, this corporal started across the battlefield to catch up with his company. Near Ablaincourt, his tank was put out of action by a hit from a 25-mm antitank gun. His radiator had been pierced and with great difficulty he drove to cover in a sunken road. Several wounded tank crewmen were also taking advantage of its cover. This same corporal's crew set up a machine gun for protection against the enemy. By this time, the German tanks were far ahead and our riflemen far to the rear. A disabled German tank, burning nearby, made a large smoke cloud under cover of which the two corporals moved their machine gun a few yards forward to get a better field of fire. When the wind changed and cleared the smoke away from their front, the enemy observed them and kept them under fire for several minutes. They then decided to come out in the open and summon the French to surrender. The latter retreated into the village and started to find the range to the sunken road with their antitank guns and machine guns. At this dangerous moment the tank crew and the wounded in the sunken road were relieved from their predicament by German tanks arriving from the rear.

The company headquarters group with its open, cross-country car and several motorcycles was to follow the combat platoons a half-hour after the assault started. The experiences of this group illustrate the cooperation between the tanks ahead and the infantry following in their wake.

After passing through Belloy, this group also encountered heavy fire from machine guns and antitank guns, while the enemy artillery barrage, 200 meters deep, still fell in this area. The company headquarters took cover for an hour and then jumped into their vehicles and drove back toward the rear despite the machine-gun fire following them in rapid bursts. After a few hours, they decided to venture another dash up to the Roman Road. . . . Although it was already afternoon, the enemy machine-gun fire still continued so strongly that the open cross-country car had to return again in spite of its increased speed. In Clery, it met the supplies that had meanwhile arrived from the rear. Together with the latter it was not able to move up to the front until the next day when the rations were handed out at about 9:00 AM at the southern exit of Hallut. A sergeant-major reports as follows concerning the command of the company combat train and maintenance squad:

"When the combat platoons left the position of readiness for the attack, I followed after them with two side-car motorcycles until I arrived near Estree where I was stopped by enemy infantry fire. The next bound led up to the Roman Road where the combat platoons had halted. Hostile fire made it impossible to cross the Roman Road. I decided to drive back to my supply vehicles and guide them into Estree. Having driven forward across country, I had some difficulty in finding their camouflaged position. After detaching my company section from the regimental maintenance company, I led it to Estree on a previously reconnoitered route. Upon arrival, I deployed my vehicles and tried to resume contact with the combat platoons, which, meanwhile, had advanced far ahead. I saw in front of me only the vacant battlefield, still covered by French fire.

"Returning wounded reported that one of our tanks had broken down about two kilometers or 1¼ miles ahead. This was the machine-gun tank of two corporals (referred to above). I tried to advance on foot, but the enemy fire prevented. . . .

"Then I tried to drive around the village of Estree and thus continue the advance. When I arrived about 1,000 yards from our combat platoons, it was impossible to make further headway due to heavy artillery fire. Between shell bursts, I led my repair group back about 1,500 yards to a point beyond the hostile artillery fire. Leaving the vehicles behind, I tried for the third time—this time alone on my motorcycle—to establish contact with the combat platoons. Meanwhile, Estree had been taken by our riflemen, but the heights beyond were still subjected to effective hostile infantry and artillery fire. I had to turn back again, but this time I drove to the division command post to obtain information about the leading echelons since radio contact with them was unsatisfactory. At the division command post, I learned that the tanks were already 15 miles ahead and that it was impossible for them to make further headway.

"Shortly after this, information was received that the regiment was surrounded and was in great need of ammunition, fuel and spare parts. The hour for bringing up the combat trains was still unannounced. Leaving a messenger behind at the division command post, I then contacted the regimental maintenance company. There was

nothing left for us, but to wait for the order to bring up the supplies. This command did not come until after midnight.

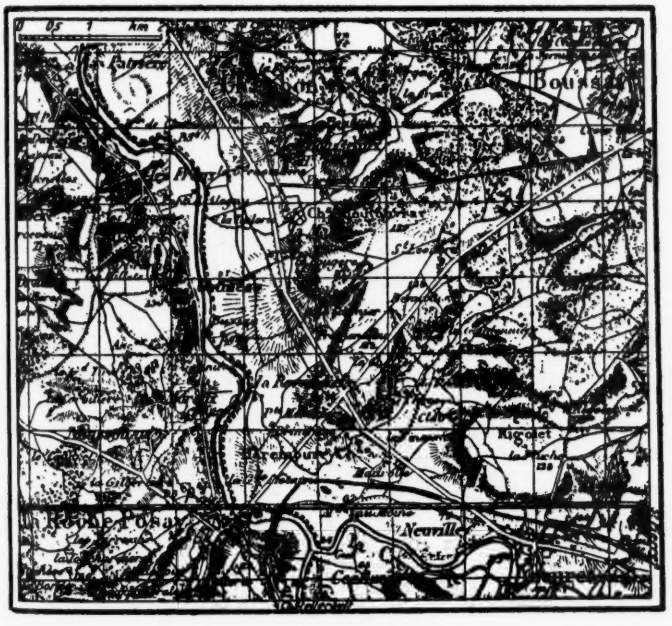
"Included in the battalion combat train were trucks for ammunition, fuel, food, tools, and spare parts. The situation on our right and left was unknown . . . Just before arriving at Chaulnes we saw disabled German tanks on the right and left of the road. We drove through Chaulnes at daybreak and driving cross-country we delivered the needed supplies to the combat platoons."

The Attack of the 7th Company of the 134th Infantry on La Roche-Posay on the Creuse River, on 22 June

["Der Angriff der 7. Kompanie Infanterie-Regiments 134 auf La Roche-Posay an der Creuse am 22 Juni." Translated and condensed at the Command and General Staff School, from *Militärwissenschaftliche Rundschau*, June 1941.]

On 22 June, the 7th Company is marching toward the Creuse, as point company. Better expressed, they are "riding"; for days, every member of the battalion has "motorized" himself with a bicycle.

After travelling less than four miles, it is reported that the point of the column has been fired on by a hostile armored



scout car; that the enemy has kept from being drawn into combat, and retreated. The march continues past Preuilly on through villages which never before have seen German soldiers. Beyond this the point is again fired upon but continues on in the direction of La Roche-Posay on the Creuse.

The closer the company gets to the village, the greater is the intensity of the artillery fire from the southwest; a sign that that region must still be occupied by a hostile force.

When about two miles from the Creuse, the company parks its bicycles at the edge of a little wood and deploys. The company commanders are summoned by the battalion commander and given the following order:

"The enemy, estimated to be a reinforced battalion, is in a defensive position in La Roche-Posay. The regiment will prepare for an attack, with the 3d Battalion leading, on the south slope of the hills to the east of the Preully—La Roche—Posay highway. The 1st Battalion will be in regimental reserve.

"Adjacent units: on the right, none; on the left, a machine-gun battalion.

"The reinforced 2d Battalion will go into position on the south slopes west of the Preuilly—La Roche—Posay highway.

"Disposition: 6th Company will take the left (east) front, deploying 200 yards to the right of the highway; 7th Company on the right front remains in contact with 6th, deploys on a 350-yard front; 5th Company follows the 7th Company as far as Chambon-Yzeures highway, from there on it follows the 6th Company.

"Boundary between 6th and 7th Companies: line connecting the tall, unusual tree, and the group of houses.

"Mission: The 6th Company will attack along the Preuilly—La Roche highway, take possession of the bridge and penetrate the city. The 7th Company will take possession of the river bank and counter flanking fire from the right. The 2d Pioneer Company will ferry the company across the river with pneumatic boats. After reaching the Gatineau—La Roche highway, the company will turn left and penetrate the city and seize the market place.

"The 5th Company will remain in battalion reserve.

"The 8th Company will furnish the 6th and 7th Companies with one heavy machine-gun platoon and one heavy trench mortar unit, each. The remainder will remain in battalion reserve.

"The battalion's attack will be supported by two artillery units.

"The beginning of the attack is set for 8:30 PM."

The companies are taken to the assembly area and begin the attack at 8:30 PM, sharp. The platoon leaders rush ahead, the platoons follow their leaders in file, on account of the difficult terrain.

There is a roaring and howling. The enemy has opened with heavy artillery fire. The objective, the Chambon-Yzeures highway, is reached without interruption. Shells burst on both the near and far side of it. The men hug the ground. A shrill whistle is heard: "Company up! Double quick, after the enemy!" The first men lunge forward among the bursting shells. Everyone runs for his life. No one knows how far or how fast he ran, but the fire is now behind the company. The enemy's shells are now whining overhead.

The company now gets into the zone of the hostile trench mortars, and heavy machine-gun bullets are whirring by. The men lie in furrows, small hollows and holes in the grain fields, and behind manure piles to catch their breath for a

moment. The company is hurriedly checked in this short space of time. The heavy machine guns and mortars are also there. The pioneers' messenger returns and announces that pneumatic boats are following behind the company and that it is possible to advance. A group of houses out of which a hostile machine gun is shooting and the river bank must be reached.

Fire is coming from a piece of woods at our right front. "Light trench mortars, fire! Machine guns: fire at will!" is the command of the leader of the first platoon. The first shells are already leaving the mortar and a light machine gun is also hammering away. Fire ceases momentarily—everything is now quiet yonder.

The group of houses is now taken. A small stream is crossed. The enemy is quiet. Heavy fire starts the very next minute. The company is but 50 or 100 yards from the shore.

The machine guns busily play their metallic song. The explosions of the shells from the mortars roar heavily.

A pioneer lieutenant arrives presently and announces: "Two boats down stream; one boat up stream! Two groups immediately to the highway for security!" He disappears as he came. Silence falls suddenly on all the uproar. "On to the river!" resounds a command, and the company is afoot and rushing toward the shore.

The pioneers are at hand with boats and lose no time in getting them into the water. The machine-gun and rifle troops rush into them and are soon across. In but a few minutes' time, the leading portions of the 7th Company make the crossing, and the rest quickly follow.

The company is quickly reassembled on the highway on the other shore, and, in open order and security, moves on into the city with little opposition. Parts of the 6th Company, which arrived more rapidly by way of the bridge, are already there. We capture 25 Paris buses. Many are taken prisoner. At announcement that armistice negotiations are already in progress between Germany and France, they express joy. They are surprised that the attack has succeeded so quickly in spite of intense machine-gun and artillery fire.

The cooperation between infantry and artillery as well as their mutual cooperation with the heavy machine-gun and mortar units and pioneers, was exemplary.

With the attack on La Roche-Posay, the war was over in France for the 7th Company. At 1:35 AM, on 25 June, "cease firing" was sounded. The war on the western front was at an end.

Instruction Concerning "The Duties of the German Soldier"

[From an article by Captain von Matuschka in *Militär Wochenblatt*, 15 August, 1941. Translated and condensed at the Command and General Staff School, Fort Leavenworth, Kansas.]

Instruction concerning the "Duties of the German Soldier," is considerably neglected, almost everywhere, in the training and education of recruits. We find again and again that in the various units of replacement forces, only from one to at the most two hours are allowed (inclusive of the instruction concerning the oath to the flag), during the period of the eight weeks' training.

One or two hours devoted to this essential instruction given to young soldiers during their first weeks are not nearly enough. It is necessary, of course, to have a clear idea of the purpose of this instruction. Its purpose is to show the man, about to be a soldier, the proper direction of advance and indicate to him, in clear and understandable form, the principles on which things military are based, as regards the soldier himself. In the first two weeks of the training of the recruit this must be the favorite and most agreeable duty of the company commander. If this work is left to the noncommissioned officers of a unit, the company commander indicates that he either does not have a proper sense of those instructional elements which are most essential and necessary, or else that he is trying to avoid the trouble and labor demanded by this instruction. Is not this very invisible work which is done on the souls of our men one of the greatest duties of our officers? That which has to do with exercises, can be imparted by the noncommissioned officer; the other cannot. In addition, this instruction gives the company commander the opportunity to know his new recruits and some of them better, perhaps, than he ever could in barracks.

Let no one say that in the eight-week training period there is not time enough to be more thorough with the instruction relative to the "Duties of the German Soldier." In the first two weeks, the company commander will have about seven hours which he can devote to instruction on the "Duties of the German Soldier" and the significance of the oath to the flag. I regard this as the minimum of time.

This instruction demands thorough and comprehensive preliminary effort, for no kind of instruction is so difficult. First of all it is often not exactly simple to find a way to make the instruction understandable to a man of ordinary mind. That requires thorough previous study after one has a clear idea of the principles to be brought out. It is astonishing how often farm laborers, etc., who come from simple surroundings and are entirely unaccustomed to even slightest mental effort, get along when the instruction is given in proper form. Even though their answers are often crude, almost laughable, one often remarks that the man has quite the correct idea but is unable to express it. In addition, the men's eyes tell whether or not the instruction is succeeding and whether one has gained their confidence. If one or more of them is so stupid that he can understand nothing at all this man will not know what it is all about, either, when he faces the enemy. Such a man is only a hanger-on. But to the others I give something to use as a foundation on which to establish their conception of what it means to be a soldier. I show them the great relationships between all which they go through daily in barracks or in the field and that which, during the first weeks of their training period, crowds into their consciousness as something entirely new. But even that man, who apparently comprehends and understands nothing, feels, perhaps, that there is something very great

and exalted there, in which he has a share. In this sense of the word, the instruction has not been a failure even in his case.

One essentially educational aspect of this instruction results from the fact that, in the further course of the training, the men not only can, but must return time and again to the fundamental military principles discussed in their first fourteen days. On the occasion of some disciplinary punishment or other event in the company, especially, it is well and necessary to point again to the "Duties of the German Soldier" and to teach the men by dint of continually renewed driving home of and explanation of the soldierly principles.

Motorized Marches

[Condensed from an article by Major Mann in *Artilleristische Rundschau*, July 1940.]

Since every order issued on a motorized march may quickly develop into either favorable or unfavorable results, the leadership must carry with it foresight, ability to make quick decisions and great mental as well as physical agility. The movement of a motorized unit is a most difficult task as to technique in leadership and traffic control, particularly in large units, with many different types of vehicles.

There is a distinction between *route* and *tactical* marches. The principal consideration in a *route march* is to get all vehicles to their destination as quickly as possible with as few breakdowns as possible. In a *tactical march* it is necessary to get the unit or units to their designated positions in their proper tactical formation, prepared for employment.

In tactical marches, vehicles can not be grouped and arranged in the column to obtain their maximum speed and economy, as is the case in route marches.

The following points must be considered when grouping vehicles for a long march: Grouping vehicles according to types, i.e., the formation of march sub-groups or march blocks (serials) of tractors, trucks, or automobiles, is not practical, because some vehicles would be separated from their units, thus making it difficult if not impossible to supply, maintain and ration the various units in the column. Moreover, difficulties would be encountered at the end of the march, especially if the units in the column are moving to different localities.

For uniformity's sake, the best motorized movement is made with intervals of from 5 to 8 kilometers (3 to 5 miles) between units composed of 30 to 40 vehicles. This saves wear and tear on the vehicles, permits travel at a good average speed and imposes much less strain upon the drivers. In short columns, the column commander can easily keep an even speed, especially if he places the heaviest and slowest vehicles in the lead.

However, this will not always be possible, especially in the movement of large units. In such cases, an effort should be made to use several roads and to divide the marching unit into as many sub-groups as possible in order to avoid traffic congestion and interruption. When long march columns move on one road, the last units often arrive at their destinations many hours after the leading units, often late at night, with a corresponding delay resulting eventually in the postponement of essential maintenance until the next day.

Before beginning his march, the commander of a motorized column or an independent march unit must first of all consider three things:

a. Road reconnaissance.
b. Road improvement, especially in winter.
c. Arrangements for traffic regulation.

—*Hamburger Illustrierte*

THE TRACTOR USED HERE IS STATIONED ALONG A RUSSIAN ROAD WHERE TRACK VEHICLES AND OTHER HEAVY TRAFFIC HAVE MADE THE ROAD ALMOST IMPASSABLE. THE TRACTOR IS A CAPTURED FRENCH R-35 TYPE LIGHT TANK.

It is fundamental that every road must be reconnoitered, except possibly when the march is made on a super-highway and main highways under peacetime conditions. The road reconnaissance should be made by a patrol sent out well in advance of the marching column. This patrol should include a qualified officer or sergeant and two or three motorcycles, depending on the length of the march. The reconnaissance should be carried out by sectors so that the first reports, at least, are available to the column commander before the march begins. The patrol leader should be given definite instructions as to the limit of his reconnaissance, and as to the location of the column commander at a designated hour. The details to be included in the reconnaissance report are given in regulations. Reconnaissance should also be made to determine whether other troops are on the highway and whether it is under hostile fire.

The patrol leader divides the route to be reconnoitered into sub-sectors and as soon as the results have been turned in from one sector, he sends a written report by messenger to the march column commander. These sub-sectors should be chosen so that in case barriers are discovered, the column can make a detour around them. It is also essential that maps be carefully studied beforehand. The earlier the reconnaissance is begun, the better.

If the march is to cover a long distance and continue several days, it is also advisable to send a patrol ahead to reconnoiter the route to be covered the next day and have its report brought to the overnight bivouac. Thus, the column commander has the material available for the following day's

march order and he can make plans in bivouac during the evening. In such cases, two patrols must be designated to permit alternating with one another.

The weather conditions and the information contained in the reconnaissance reports may make it necessary to detail a route improvement detachment. Such a detachment should consist of sufficient personnel provided with several trucks loaded with appropriate materials such as sand and pioneer tools. A tractor should also be included if available and its need is foreseen. The mission of such a detachment is to drive ahead of the column and repair those parts of the route that are likely to slow up the march. As such repair work may take considerable time, the detachment should move out well ahead of the column.

A great deal of attention must be given to traffic regulation. The so-called "traffic regulation detail" consists of one officer, one noncommissioned officer, each in a motorcycle with a sidecar, and six to eight motorcyclists. The more motorcyclists in this detail, the better. If difficulties are to be encountered on the march route such as numerous villages, heavy traffic, frequent crossroads and mountain roads, it will be necessary to use two traffic regulation details which also alternate with one another. The detail commander must be a very energetic officer who can carry his point with a superior, if necessary, but of course in a polite military manner. Above all, he must be enthusiastic about motorcycling and he must be able to organize his tasks in a rapid and logical manner. The column commander should discuss the march route and the important traffic problems with him in the presence of maps and the reconnaissance reports. His task should be divided into short route sectors and he must know the probable location of the next important rest halt for the column. Also, he should always know where he can find the column commander, or his representative.

All personnel on the traffic regulation detail wear an arm band so that they may be identified at a great distance. This detail has many different tasks to perform. First of all, it must assist in the formation of the march column itself. The highway must be kept free of traffic while this is being done. Traffic sentries should be posted at all crossings to hold up cross-traffic when the column approaches. Liaison should always be maintained with the leading elements in the march column and, when they halt, the elements following should be notified in order to prevent the vehicles from closing up and to provide an opportunity to find shelter from aircraft. The column should also be warned of terrain difficulties where required. When necessary, appropriate members of the detail should propose that the column be halted and that vehicles move forward individually to pass the critical point.

Points selected for rest halts should also be reconnoitered. When small units are halting or resting on the road, they should not be passed by other units unless contact has been established with the leader of the halted unit.

Traffic congestions should be avoided. It is especially important that cross-traffic in villages be regulated. The traffic detail commander should drive through the villages well ahead of the column and decide where to post his sentries. He, or his representative, should then wait on the near side of the village for the column and then move ahead of it as a "pilot," pointing out or detouring all barriers. If the column is to move through a large city, contact must be established with the city traffic police, and their assistance requested. Therefore, the traffic detail commander should know the length and the exact number of vehicles in the column. If two traffic regulation details have been designated, one of them should drive straight through the city and begin reconnaissance on the other side. It is important that the traffic regulation detail commander keep constantly in close touch with the march column commander during the entire march.

The route improvement detachment should be placed at the disposal of the traffic regulation detail at some predesignated point. This detachment must be employed so that no congestion arises while the repairs or improvements are being made. When a long time is required for a route improvement task, the column should be halted at a suitable point and the men should dismount.

During night marches, the traffic regulation detail should be equipped to clearly mark dangerous or obscure critical points.

All motorcyclists, not otherwise detailed, march with their unit commanders. One motorcyclist marches at the tail of each unit. When the head of a unit approaches a sentry, posted by the traffic regulation detail, this sentry is relieved by a motorcyclist from the approaching unit who receives short instructions from the old sentry. The new sentry then lets his unit drive by and he is relieved in turn by a motorcyclist from the next unit. Thus, the motorcyclists do not remain too long at one point and they are soon available to their unit commanders for other important missions.

All advance measures and precautions, which the march commander desires to be observed, must be definitely stated in the march order. Since this order is usually issued rather late, a short warning order should be given, announcing the time allotted for the technical service of vehicles, the probable hour of assembly, the assembly point and the initial point. The contents of the march order are listed in regulations. If the units and commanders comprising the march column are inexperienced in marching technique, then the march order should be given in greatest detail.

About one-half to one and one-half hours before the march is to begin, the traffic regulation detail should be informed as to the assembly point and the hour the march is to begin. The orders to this detail should also be stated clearly and definitely.

When several units, each with the strength of a battalion, are marching on one route, it is advisable to form a traffic regulation detail from each unit. Attempts to regulate the entire group as a unit always fail because the march column is too long, motorcyclists are trained differently in different units and the commander of a large unit needs his own motorcyclists. March preparations are then made by each unit in accordance with the basic principles prescribed in the march order.

In addition to detailing the route reconnaissance patrols and the traffic regulation details, the vehicle drivers must be informed as to the march route. In foreign countries, where the names of the towns are not pronounced as they are written, slips of paper listing the names of the towns arranged in proper sequence, and their pronunciation, should be distributed and then pasted on the windshields to the right of the drivers.

Furthermore, maps should be studied, and when possible they should be distributed according to the unit distribution list.

Within each unit, vehicles should be ordered to be ready to move at a definite hour. Therefore, at a designated hour, the motors should be warmed up so that all vehicles can move out immediately when the signal is given.

The actual march generally begins at the so-called initial point beyond which the march column formation is maintained. When computing time, it should always be kept in mind that every hour spent waiting in bivouac or halting en route, should be utilized for maintenance purposes to increase the march efficiency of the column.

The column should move out slowly until the engines have attained their correct operating temperatures. The speed should be increased gradually until the real march tempo is reached. The slowest vehicle in the column should be considered when setting the marching speed. Medium and heavy track vehicles (half-track prime movers) must not drive faster than 35 kilometers (22 miles) per hour, otherwise the engines may be damaged. According to regulations, it is forbidden to prescribe an average speed in orders. It is also forbidden to set a speed limit. The speed depends upon the vehicle and the road conditions. Hence, it varies continually. A vehicle responsible for setting the correct speed should be placed at the head of the column. This mission should not be given to the commander's vehicle because he should not be forced to remain constantly at the head of the column. He should be free to drive a little in advance so that he can keep well informed on the situation. He should also let the column march by him now and then, to keep a check on the march discipline. This latter measure is very important on long marches with large units.

In case a vehicle is forced to drop out of the column on the march, the driver should immediately move off to the right of the road and at the same time give the next following driver a signal to drive on. The driver of the disabled vehicle should then investigate the cause of his trouble. The maintenance sergeant, riding in the last vehicle of the unit, will arrive eventually and give orders to the driver.

After the repairs are completed, the driver is told the exact march route and he moves out to rejoin his unit in the column, but under no condition should he pass marching vehicles. This procedure always leads to accidents and damage to vehicles. These accidents usually result from the driver's fear of losing contact with his unit. It is therefore absolutely necessary that the driver of a disabled vehicle in rear of the column know the exact location of the next long halt. During such a halt, he can then rejoin his unit without difficulty.

If major repairs have to be made, the maintenance section, marching at the end of the column, should be notified or it should be informed that the vehicle is being sent to the next repair shop.

On long marches, arrangements for refueling should be completed in advance. If the fuel trucks are likely to be attacked during a halt, it is advisable to unload the drums at the designated refueling point and send the empty vehicles ahead during the march to the next fuel issuing depot, arranging a meeting place with them later. Thus the loaded fuel trucks are again at the disposal of the column at the end of the march.

Time should be allotted for either long or short rest periods during the march. It is advisable to arrange a rest period at the initial point, before the march column moves out as a unit, in order to permit minor adjustments and repairs. It is also advisable to halt after the first three-quarters of an hour and then every hour after that for a short period. A long rest of 2½ hours should be made sometime during the day and advantage should be taken of this time to refuel and inspect the vehicles. Also, the traffic regulation detail should rejoin the march column and the motorcyclists relieved during this period. If possible, these halting points should be concealed from aerial observation, just off the road, but easily accessible thereto. The hour the march is to be resumed must be announced immediately upon halting and the technical staff should begin to look over the vehicles at once.

If the column makes a rest halt on the road, spaces must be left within and between the different units to serve as passing points for oncoming vehicles. These spaces must all be the same size. Traffic sentries, provided with signal discs, must be posted along the march column to regulate the passing vehicles in accordance with the well-known one-way traffic procedure. These sentries must be detailed before the march begins. Drivers must not be used for this duty.

In such situations, all vehicles draw up to the very edge of the road, and the motorcyclists park at right angles with the march direction so that they can move out promptly, either towards the front or towards the rear.

In case resting troops are overtaken by another march unit, the respective unit commanders must contact each other to determine whether or not the resting column will remain in place long enough to warrant the overtaking column to pass.

Efficient command of a long marching column is possible only with the help of motorcyclists.

When signal discs are used, the signals must be given clearly and distinctly. Two signals are necessary; one, to draw the drivers' attention to the disc (preparatory command); the second, the signal itself (command of execution). The second signal should be given only after it is certain that the first has been seen by all the drivers. In this connection, it is essential that the drivers, or their assistants, be constantly on the alert, since the success of the march depends to a great extent upon their cooperation.

We must emphasize the importance of this cooperation which must never relax during the entire march. The individual in charge of each vehicle must keep an eye on the road, observe the drivers and neighboring vehicles, and pay attention to all signals. He must always be ready to make a sudden, unexpected decision.

If there is a traffic jam, the leader and sub-leader of every vehicle concerned is responsible for rapid and energetic measures to disentangle it. If this is impossible, the commander of the unit directly involved in the traffic jam should immediately notify the following units so that they will not close up and also become involved. This precaution is doubly important when there is danger from the air.

Such traffic congestions are usually caused by lack of precautionary measures at river crossings and pioneer combat bridges. Frequently, hundreds of vehicles are kept standing at these bridges vainly waiting to cross. Accord-

ing to regulations, a bridge officer and traffic control officer must be detailed to every bridge. When the commander of a march unit is notified by his traffic regulation detail commander that his unit is approaching such a bridge, he immediately drives ahead and if he notes that a traffic congestion is likely, he subdivides his column and parks his vehicles in readiness for the crossing. He details an officer with several motorcyclists to assist in the crossing. This detail, cooperating with the bridge officer, guides the column subdivisions from their parking places to the far side of the bridge.

In winter, special preparations should be made for a march, if the roads are covered with ice and snow. Under such conditions, every road, even the best of them, must be previously reconnoitered. Many slopes, which are very easy in summer, and almost impassable in winter, due to the slippery ice. After the march unit commander has received the reconnaissance reports—which should be received as early as possible—he decides whether or not chains should be put on the tires. It must be remembered that chains cause a great deal of wear and tear on the tires, when there is no snow on the ice. Moreover, such conditions are also bad for the chains themselves. It requires from one to one-and-a-half hours to put chains on the vehicles of a unit consisting of 30 to 40 vehicles.

In winter, relatively long distances are necessary between vehicles to enable them to negotiate difficult points on the route. It will often be impossible to determine, even approximately, the time of arrival at destinations. Generally, the best that can be done is to place certain march routes at the disposal of single units and allot them a liberal amount of time to use these routes. Normal time allotments will often have to be doubled. Due to the greatly decreased marching speeds and the intense cold, drivers tire very quickly. The motorcyclists, especially, are under a great strain. It is advisable to let them drive ahead under a leader to some house or shelter where they can get warm.

During winter marches, the road improvement detachment should be detailed early. This detachment must be provided with sufficient personnel and material, such as sand, to make all dangerous points passable. Such measures are often a decisive factor on mountain roads.

Furthermore, "pushing details" should be sent ahead under energetic leaders. So-called "stuck vehicle details" should be attached to the leading units. Their task is to report back at once in case the leading units are halted by road conditions, so that the following vehicles will not close up or collide against those ahead.

The night march is the most difficult of all, especially when no lights are used. Under these circumstances, it is most important to keep together and within sight of the vehicle ahead. The column must be kept together even when this necessitates a reduced speed. Halts, such as are made during day marches before and after passing through large villages, must be made very often during the night in order to keep closed up.

Every driver and individual in charge of a vehicle must know the march route and must have a flashlight at his disposal. The signals must first be flashed to the front to show that it has been understood and then to the next vehicle in rear.

Sentinels should be stationed with flashlights at points where the visibility is poor, at dangerous points and at all crossings. If a turn is to be made, every vehicle should be notified. Special attention should be given to strange vehicles. If they should turn from the column, they are likely to lead the following vehicles with them. In order to prevent strange vehicles from causing such confusion, it is advisable to put an illuminated distinguishing white sign on the rear of these vehicles.

If a halt is made at night, a warning sentinel should be detailed 100 meters ahead of the column and another one, 100 meters behind it. These sentinels should warn the oncoming vehicles with a red light.

Heavy dust clouds can also make similar measures necessary. If a quick turn is made, the following vehicles must be given a timely warning. As in night marches, special attention should be given to strange vehicles. An increased distance between vehicles may often be necessary.

To summarize, a motorized march demands detailed preparations, careful planning, quick thinking and adaptable commanders, cooperation of all subordinate leaders, and excellently trained drivers.

As far as it is tactically possible, an effort should be made to divide the column into units and sections. This saves wear and tear on men and material.

The Nazi Motor Corps

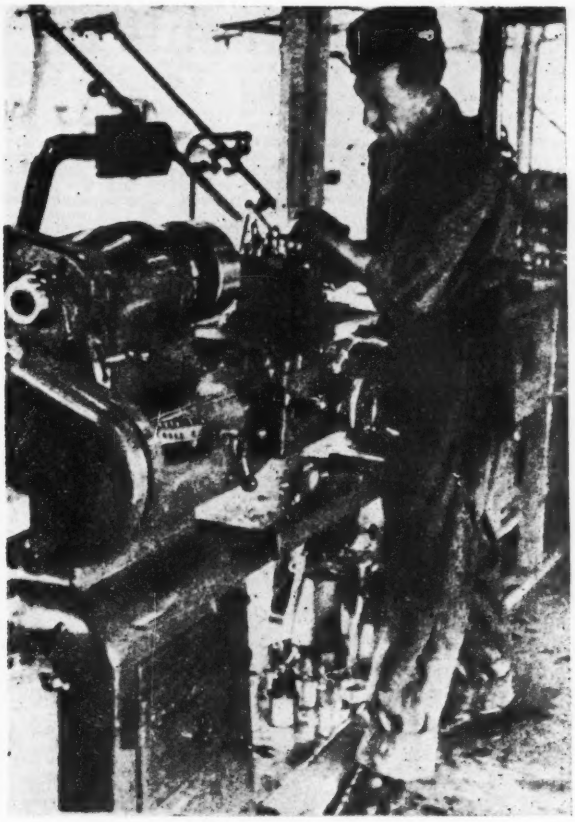
Appearing on the opposite page are three pictures (Plates 1, 2, 3) of a German repair shop. Plate 1 shows a picture of the manual tool bench, while Plate 2 shows some of the power tools, including a lathe. Plate 3 pictures a shop truck trailer being prepared for action.

This work is done by an organization known as the NSKK, which, translated from the German, means the National Socialist (Nazi) Motor Corps. All manner of vehicles have been requisitioned in Germany and made available to the NSKK, which not only transports building materials for the OT (Organization Todt, named for General Todt, who organized "Construction Engineers" to repair and construct bridges, air-landing fields, etc., just in rear of combat zones) but also transports ammunition to the army.

In the countries overrun by Germany, motor vehicles, both captured and requisitioned, have been pressed into NSKK service. NSKK vehicles are usually painted grey in Germany. A major problem of NSKK is to maintain this wide variety of types of motor vehicles.—THE EDITOR.

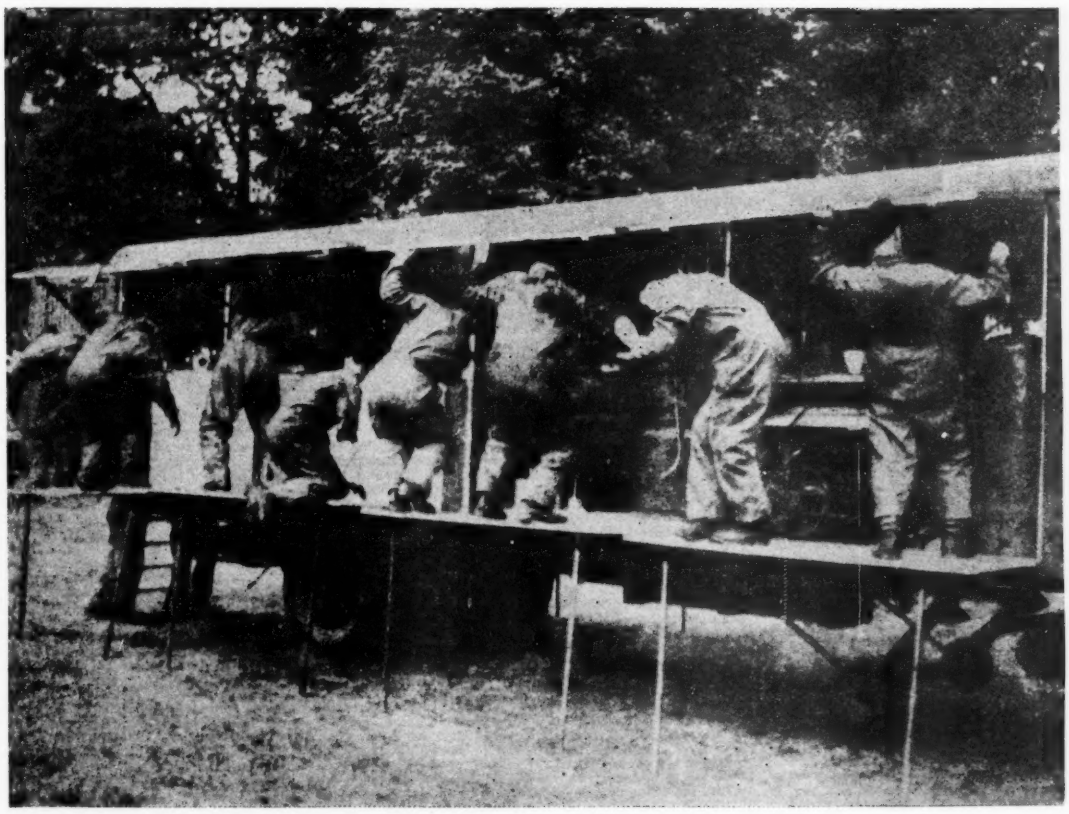
Deutsche Kraftfahrt

PLATE 1



Deutsche Kraftfahrt

PLATE 2



Deutsche Kraftfahrt

PLATE 3

GHQ Comments on North Carolina Maneuvers

Following the first phase of the First Army — IV Army Corps maneuvers, GHQ controlled, a critique was held at Monroe, N.C., 24 November. Lieutenant General Lesley J. McNair, Chief of Staff GHQ; Lieutenant General Hugh A. Drum, commanding the First Army, and Major General Oscar W. Griswold, commanding the IV Army Corps, made addresses.

Though the critique was held in closed session, comments by General McNair were released with the statement that it is the hope "that faults mentioned will be corrected in the succeeding phase and during future training."

The comments of General McNair follow:

Section I

Umpiring

"1. Umpiring has been generally good during this phase of the maneuver. Decisions of umpires have appeared fair and correct as a whole. Instances have been noted in which participating troop commanders have interfered with umpires, questioned their decisions and engaged in argument. Such action is not fair to the umpire and may result in the feeling among participants that decisions finally made are not fair. Troop commanders must accept the decisions of umpires without question.

"2. Many violations of umpire flags and disregard of umpire decisions have been noted. Such practice not only violates the spirit of fair play but is a direct violation of the regulations. Furthermore, such action may upset the execution of a tactically sound plan and affect adversely the actions of the opponent who is complying wholeheartedly with the regulations laid down for the conduct of the maneuver.

"3. In many instances the display of the white flag was a signal for the gathering of officers and men. Not only is this conduct unmilitary but it discloses dispositions. The GHQ umpire manual requires that all troops of the unit halt in place while the flag (white) is displayed. When an umpire is present there is no reason for a troop commander to move from the position he occupied when the white flag is displayed.

"4. Instances have been observed in which umpires and umpire cars have congregated. This is not only unnecessary but many umpires are thus absent from their own units when their presence is needed. Such congregation also frequently interferes with troop action.

"5. Frequently, umpires have permitted troops of opposing sides to approach to too close contact. Such action multiplies the problems of the umpire and has on several occasions resulted in physical encounter between aggressive, enthusiastic opponents. In several instances personnel have been wounded by the close fire of blank ammunition.

"6. In one unit, umpires were not issued maps. The umpire is entitled to this aid in the performance of his mission and it should be provided by the command to which he is assigned.

"7. Several instances have been noted in which umpires required an excessive length of time to reach a decision. As much time as one hour has been so used. Such action delays the action unduly and impairs the confidence of the participants in the umpire. When umpires remain abreast of the tactical situation and have the running account of the fire power of their units up to date, they should be able to arrive at a sound decision without delay.

"8. At some points of contact there have been no umpires or insufficient umpires. Troop commanders are *not* authorized to act as umpires. All commanders and umpires must be impressed with the fact that when only one umpire is present at the point of contact he is charged with umpiring the action regardless of branch or umpire assignment. When no umpire is present action will be stopped and the opposing commanders will each endeavor to secure an umpire expeditiously.

"9. At least one instance was noted in which an umpire informed the troops to which he was attached of the location of elements on the opposing side. This unfair practice gives a great advantage to the unit so informed and is unfair to the opposing side.

"10. There have been occasions in which flags were improperly displayed or so poorly located that they were not visible to the troops whose actions they were supposed to control. Other occasions occurred in which umpires were without marking flags. Each umpire is responsible that he is provided with flags and that they are properly and clearly displayed.

"11. Umpires are reminded again that night combat is to be permitted only when it can be properly umpired. When umpires with opposing forces in contact find themselves unable to control the action, they will display Red flags. This will have the effect of stopping all movement of elements in contact toward opposing forces. *This provision applies also to armored forces.*

"12. It is repeated that the realistic play of the maneuver requires that the actions of small units be played out. The lumping of fire power of battalions, whether completely employed or not, fails to provide the realistic picture of war.

"13. It was noted that observation planes (both O-49 and Cub) frequently flew over hostile troops at altitudes of less than 1,000 feet. Obviously, such action would result in severe losses and penalties should be assessed by air umpires.

"14. Lack of adequate markings has often complicated and made more difficult the task of the umpire. It is each commander's responsibility to assure himself that all personnel and vehicles are properly marked.

"15. Artillery fire marking was generally good. Umpires and crews were alert. Occasions were noted, however, in which unit umpires failed to assess casualties and penalties for such fires. This may create a false impression and lead to unnecessary casualties under actual war conditions.

"16. Much improvement has been noted in air umpiring. There has been no evidence of attempts to influence air umpires by their commanders or other personnel.

"17. Umpiring of air-ground action can be improved by a more careful evaluation by unit AA umpires of the preparation and readiness of the antiaircraft fire unit to deliver effective fire on the target; close supervision and strict application of the rules by the coordinated defense and prompt rendition of reports of losses to the Air Director.

"18. Umpires with certain infantry units attacked by tanks and other armored vehicles insisted on umpiring the action purely on the basis of the relative fire power instead of the neutralization and overrunning of the ground troops (pars. 16, 18 *c*, & 26, Umpire Manual). Unless infantry elements have antitank weapons with them, they have in effect no fire power against armored elements alone. However, if dismounted infantry attacks in conjunction with the armored elements, the fire power of the opposing infantry is effective against the attacking infantry.

"19. A guard at a bridge on U. S. No. 1 early 18 November which had been prepared for destruction was observed wearing a white arm band. This is a violation of instructions given to umpires at meetings on 14 November. The white arm band should have been put on only after the bridge was blown.

"20. Armored Force Regimental Umpires were observed on several occasions well back in their columns. Since their principal task is to see that junior umpires are performing their duties properly, they should so place themselves in formations as to be able to reach points of contact promptly. They are frequently needed there to make major decisions."

Section II

Command and Staff

"21. Command post locations usually were well selected, the installation well concealed and well arranged. In a few instances, both in attack and defense, they were located too far to the rear. This not only places a great strain on signal communication facilities but in the face of mechanized elements they become vulnerable targets. Instances were observed in which command posts were neither concealed nor camouflaged. In general, security of command posts was adequate and effective. Yet, there were a few instances of complete lack of security and protection from ground attack with the result that several command posts were surprised and captured. Some command posts were located near prominent features on the terrain, such as bridges, which are frequently targets for air attack and artillery concentrations.

"22. There were many cases of failure thoroughly to plan and coordinate motor movements. This resulted in traffic jams, loss of time to units involved, and undue exposure of columns to ground and air attack while being halted on roads. Such failures may affect adversely the general plan of action; they may even be the major contributing factor in the defeat of a command.

"23. A large percentage of the field orders which were issued were clear and concise. Fragmentary orders were frequently used and delivered by liaison officers. However, some field orders were unnecessarily long, contained instructions in great detail and used the conversational and lecture style. One order did not list its annexes, which were neither numbered nor titled.

"24. Many commanders and staffs appeared not to appreciate the necessity for maintaining liaison with higher, lower, and adjacent units. There must be a steady flow of information in all directions. Only by this means can be combined efforts of the command be properly conducted. Frequently the use of liaison officers is the only means available for this purpose.

"25. Provision of adequate reconnaissance and security measures is a function of command. Greater attention must be paid to this important matter. Repeated instances were observed in which columns were moving along the road, with contact with the enemy probable, yet no provision had been made to protect the column. Leading elements frequently were delayed by demolitions and antitank guns. Reconnaissance and security elements could have prevented this by clearing the way for succeeding units.

"26. Lack of aggressive reconnaissance often slowed the movement of the main bodies. Each commander must employ the agencies at his disposal to determine not only what enemy is in front of him, but whether terrain or other obstacles will delay his continued advance.

"27. One of the most important duties of commanders, namely, to coordinate the action of subordinate elements, was occasionally neglected. To function effectively all elements of the command must know what they are to do, when they are to do it, and how they fit into the general scheme.

"28. Anticipatory planning and provisions to meet possible contingencies were, as a rule, well conceived in higher headquarters. A notable example of this was the measures taken by the Red Corps Commander to build pontoon bridges at the earliest practicable time. This action not only augmented the permanent bridges and speeded the movement of the whole command over an unfordable obstacle, but it provided supplementary means for crossing in the event the permanent bridges were bombed.

"29. Failure to keep situation maps posted up to date deprives the commander and members of the staff of current information which they need in order to carry out their functions effectively. Several instances of this failure were noted.

"30. Instances were noted in which units attached to other units failed to submit periodic G-3 reports. This action deprived the senior commanders of valuable information which they should have received.

"31. Several instances occurred in which orders of higher headquarters fell into enemy hands. It is highly important that orders be safeguarded. This matter should be stressed in future training.

"32. Frequently, officers and men were not only unfamiliar with the general situation, but with their own local situation. Not only is familiarity with the situation on the immediate front absolutely necessary for the satisfactory functioning of units and individuals, but in maneuvers it stimulates interest.

"33. Massing of trucks loaded with personnel in open areas was a rather common occurrence when concealment and cover were available nearby. Commanders must ever bear in mind that such formations are lucrative targets for both air attack and artillery concentrations.

"34. One company commander unnecessarily surrendered his company to the enemy because he believed that his company was entirely surrounded and that his men were tired and worn out. This is in sharp contrast to many cases of units in similar circumstances who succeeded in fighting their way out. Such an attitude marks the commander as being unfit for command.

"35. There is a growing tendency on the part of commanders of high rank to protest and even disregard the rulings of umpires. Not only is this conduct unsportsmanlike but it may demoralize umpires to the extent that they will not perform their duties efficiently.

"36. In spite of admonitions, FM smoke bottles have been thrown at armored vehicles. This has resulted in serious injury, and in one case the loss of an eye. This practice will be stopped. Further violations will be followed by disciplinary action.

"37. Abuse of the privilege of the green and white flags continues. Instructions are explicit on the use of flags by units participating in the maneuver. Commanders will assure themselves that these instructions are followed.

"38. One unit occupied for several days an area which had been posted as off limits. When the commander was informed of this, he stated it was a command decision to enter a posted area. Posted areas are off limits.

"39. Light discipline was both good and bad. Blackout was rigidly observed at command posts. On the other hand, there were many cases of poor light discipline on highways. Many vehicles burned lights at night forward of the line in rear of the front line division command posts, contrary to the provisions of paragraph 9, Maneuver Memorandum No. 1, GHQ, 25 October, 1941. Not only is this a violation of instructions but a dangerous procedure against an alert enemy."

Section III

Intelligence Operations

"40. Numerous instances of maps, overlays, SOP's, SOI's and codes being captured because they were carried too far forward by troops in contact with the enemy. These violations of intelligence security measures were such as to cause serious consequences in actual combat.

"41. There were instances of improper deduction or exposition of "Enemy Capabilities" in periodic reports, i. e., a general statement that the enemy "may attack anywhere" instead of a careful consideration of time and space factors in conjunction with known enemy dispositions to determine where, when, how, and with what forces. With the knowledge each force had of the opposing force, as indicated in other sections of the periodic reports, the enemy capabilities could quite easily have been definitely limited, by deduction, to the few specific lines of action which were open to him.

"42. Ration trucks, because they are "not subject to capture," were in some cases used as reconnaissance units. This violates both the spirit and the letter of maneuver regulations.

"43. Noteworthy was the indifference by units in the matter of radio discipline. Signal Intelligence Sections with each force were able to furnish the G-2's with much valuable information concerning the opposing forces. Violations consisted of sending too many messages in the clear; mentioning units by name in clear text messages; signing commander's names, etc. Mentioning prisoners and units from which they came made possible definite identification and location of units.

"44. Plans for counterintelligence should be prepared and executed by all units. Lack of such plans was noticeable in several large commands. Blackout discipline at all command posts was excellent. Use of cover and concealment at command posts was generally excellent, although this provision was poor at the command posts of two large units on November 20.

"45. In one large command the liaison officers with both G-2 and G-3 information reported directly to G-3. This resulted in G-2 getting his items of enemy information from G-3, while G-3 had the "undigested" enemy information prior to its proper evaluation."

Section IV

Infantry

"46. Reconnaissance and security measures continue to be unsatisfactory. Examples of inadequate or complete lack of reconnaissance and security measures were evident daily in every locality. Instances are numerous in which columns advanced along roads without suitable reconnaissance or security measures to the front, and no security to the flanks. Bivouacked commands were surprised because of inadequate security measures. A resting command, as well as a moving command, must secure itself and must seek with all suitable means available to gain information by reconnaissance.

"47. A major fault observed in infantry units was the failure to maintain contact with adjacent units, or where the intervals between units were so great as to preclude this contact failure to provide adequate flank security elements. This failure may result in complete surprise by an aggressive enemy with consequent adverse or disastrous results to the operation as a whole. Numerous instances exist in which hostile forces were able to filter through gaps and reach the rear of the force which failed to maintain contact or secure its flanks.

"48. Although numerous instances can be cited where attacking infantry employed maneuver aggressively to defeat the enemy, there were many cases in which little or no effort was made to outmaneuver the hostile force. Too frequently a frontal attack only was attempted. In other instances the attacking forces stopped to await instructions or reinforcements.

"49. The use of concealment and cover by deployed infantry was excellent in some units, unsatisfactory in others. Men were observed standing or sitting and congregating in groups within effective small arms fire. Vehicles were brought up within rifle range in exposed areas and automatic weapons were emplaced in full view of the enemy when

concealment and cover could be obtained nearby. One instance was noted in which several enlisted men were sitting on the ground, their rifles between their feet, firing as rapidly as their Garand rifles would respond to the trigger. Another instance was observed in which one enlisted man crawled several hundred yards across a plowed field to take a machine gun by surprise, which demonstrated a high degree of initiative and application of correct combat procedure.

"50. Too frequently there was failure to adopt extended order formations even when moving within the range of small arms fire. It was observed on several occasions that infantry units in close column continued to march in these columns within range of firing hostile small arms.

"51. It was observed that personnel in armored personnel carriers are reluctant to leave their vehicles and maneuver on foot against enemy forces even when the conditions of the situation and terrain dictate such action. The belief seems to exist that the armored personnel carrier is a modified tank, with the failure to realize that personnel operating the weapons in the carriers are exposed and vulnerable. Frequently, all personnel in a carrier are exposed to hostile fire during the attack. On the other hand, there were numerous instances in which the power and mobility of units in armored personnel carriers were employed most advantageously in outmaneuvering a hostile force.

"52. During combat the place of the commander is with his unit. An instance was noted in which a company commander personally conducted a high ranking prisoner to the rear while his company was inactive, closed up in vehicles on the road, awaiting his return. Such action is highly undesirable.

"53. Command posts of lower units were observed which had made no provision for local security, such as observation posts, outguards, or antitank lookouts. Such failure invites surprise attacks by hostile units. In general, command posts of lower infantry units were well concealed from air observation, and well disposed to conduct operations. There were cases in which vehicles were exposed at the edge of woods, thereby revealing the location of the installation.

"54. Frontages are frequently too great, both in attack and defense. Units on wide frontages are required to do one of two things: either dispose themselves so thinly as to lack power in both the attack and the defense, or to leave wide gaps between adjacent units which permit hostile units to move through the gap either unobserved or with only slight opposition.

"55. In delaying action, individuals and units should seek concealed routes back to their next position. It was noted that units and groups formed on roads within rifle range and marched to the rear in column. Such procedure could result in only one end — excessive casualties.

"56. There is a notable improvement in infantry leaving their trucks and moving across country. However, instances were noted in which trucks loaded with troops remained on the road and the troops remained in the trucks while leading elements of the column were in contact with the enemy.

"57. Provision for air lookouts and antitank guards must be habitual and these must be so posted that they can provide early information of approaching planes or tanks. Lack of this important personnel was evident in several instances.

"58. March discipline, on the whole, was excellent. Instances were observed, however, in which roads were blocked, particularly at cross roads and road junctions, and other instances in which columns were closed up too much, or overextended.

"59. Frequently infantrymen looked up at planes overhead. Not only does this reveal their location and perhaps give valuable information to the enemy, but it may invite hostile attack from the air.

"60. During the display of white flags by the umpire, infantrymen should remain in position. Frequently they gather around the umpires, even attempt to enter into the discussion. This is a matter which must be corrected by unit commanders.

"61. Great improvement is evidenced in infantry operations, but the need of additional training in basic subjects and small unit operations was generally apparent.

"62. Failure of infantry commanders who had a tank unit at their disposal on two occasions to utilize their foot troops to assist in the attack of antitank guns cost the tank unit unnecessarily heavy losses."

Section V

Artillery

"63. Artillery reconnaissance frequently was not aggressive and continuous. Failure in this important function caused delays in entry into action and in some cases caused artillery columns to halt along roads, creating congestion and affording profitable targets for air attack.

"64. Many positions occupied by artillery units were excellent, with prime movers properly disposed in concealed areas and batteries well concealed. Other positions on the other hand, were congested with transportation. Since artillery will frequently be the target of air operations, every effort must be made to minimize the value of the target for combat aviation.

"65. Several instances were observed in which artillery positions were too far to the rear. Instances were also observed in which supporting artillery was not in the area of the supported infantry.

"66. The employment and efforts of forward observers were generally of high order. Many cases were noted of aggressiveness and initiative. On the other hand there were instances in which artillery battalions failed to assume active and complete forward observation.

"67. Artillery liaison with supported units requires additional attention. Instances were observed in which no liaison personnel were with the supported unit. In other instances liaison officers with front line battalions did not keep their commanders posted on the situation. Command posts of the supporting and supported unit were frequently too widely separated.

"68. Radio communication with forward observers and liaison officers was frequently ineffective. In one case its failure kept an artillery battalion out of an important action. Only in those units which laid wire forward was communication good. Some units sent wire heads forward, supplementing them with radio, to excellent effect.

"69. Infantry generally did not request artillery missions, nor did the artillery persist in getting them from the infantry. The failure to use all effective means in the artillery-infantry team indicates a need for further training in this important matter. Another instance of failure to appreciate the necessity for coordination and cooperation of the combined arms was the movement of an infantry regiment without the fact being known by its teammate, an artillery battalion.

"70. Some excellent survey in position areas was observed. Tying that survey into the target area and vertical control were usually neglected. Advantage was taken in some units of already existing horizontal and vertical control. The initiative of these units was commendable. However, it must be considered that such control will not be available in many possible theaters of operation.

"71. Some fire direction centers were well operated; others left much to be desired. One battalion in position made no attempt to obtain observation, did not register, and performed limited survey. This unit was waiting for an airplane which did not materialize.

"72. The most flagrant violation of artillery technique was failure on the part of some units to register and check registration periodically. Using uncorrected data from the photomap is ineffective and a waste of ammunition.

"73. Care of ordnance material and motors in many units was completely neglected. The equipment of one division was outstandingly good.

"74. The advance of two regiments on the morning of 19 November was without continuous artillery support. The supporting artillery battalions displaced by battalion rather than by echelon within battalions. Other instances were noted in which adequate artillery support was lacking because batteries were employed on antitank missions. This artillery was needed for direct support of the infantry and should have been so used until the tank attack became the primary threat in the division area.

"75. March discipline in artillery units has been generally very good."

Section VI

Cavalry

"76. Outposts were located too close to bivouac areas to provide sufficient warning of hostile attack.

"77. Toward the latter part of the maneuvers some units and individuals on outpost duty became careless. Special effort is necessary when men become fatigued.

"78. In executing delaying action troops in dismounted action failed to place all led animals in defiladed areas. At other times, animals were brought too far forward when front lines were withdrawn and were thereby unduly exposed to hostile observation and fire.

"79. Men were not kept informed as to the situation on their front nor sufficiently advised as to the general tactical situation.

"80. Units assigned missions of reconnaissance after reaching forward positions failed to keep patrols pushed well out.

"81. Adequate patrolling was not maintained at night by units which were executing missions requiring constant operations.

"82. Lateral contact with adjacent units was poor.

"83. Camp fires were allowed at night in some units while in close contact with hostile troops or when occupying forward positions.

"84. Both officers and men disregarded the use of cover while in close proximity to the enemy.

"85. Some cavalry units were severely handicapped in executing missions due to the detachment by orders of higher headquarters of mechanized elements, radios and semi-trailers.

"86. After reaching the area to be observed, units on reconnaissance failed to act with sufficient stealth and as a result were subsequently surprised and put out of action by hostile troops.

"87. Some troops during movements failed to use sufficient distances and intervals.

"88. Insufficient flank protection was provided during marches by some units.

"89. There was a lack of aggressive action on the part of some units in making an attack. One small action required three hours. A lack of coordination as to time of attack in this case caused undue delay and exposure of some troops.

"90. Troops were not sufficiently dispersed at temporary halts and in bivouac to avoid unnecessary losses from air attack or artillery fire, even though adequate cover and space were available.

"91. Some troops failed to take proper measures for concealment of bivouacs from the air. Flashlights were used excessively at night.

"92. Scout car sections and platoons frequently failed to activate energetic and distant patrolling. On other occasions patrols performed excellently."

Section VII

Armored Force and Tanks

"93. Piece-meal attacks by tank elements were too frequent. Insufficient support by infantry and artillery of attacks was provided with resultant heavy tank losses. The need for more effective coordination of effort and less headlong uncoordinated action is indicated.

"94. Too frequently were tank attacks on antitank guns made almost frontally, envelopments being neither wide nor deep. This results in unnecessarily heavy losses.

"95. An attack was ordered and initiated too late to be completed before dark. This shows poor planning and results in useless expenditure of personnel and equipment.

"96. Attack of armored elements through a town held by enemy troops is unnecessarily costly. Infantry should be used to clear the town before moving through if it is absolutely necessary to go through the town, otherwise the town should be avoided.

"97. No infantry support was furnished to the two attacks of a tank battalion on 17 November. Proper benefit from attacks of GHQ tank units is not gained unless such support is provided.

"98. A penetration by an armored unit resulted in hostile elements getting in its rear. No rear reconnaissance or security means were observed on one occasion where such a situation actually existed.

"99. An armored unit advanced to an attack without a covering force, encountered a hostile battalion which was prepared for action, and suffered immediate heavy casualties.

"100. Cross-country operation of armored elements was noted to be more frequent.

"101. While the personnel carriers of armored units are armored, they are not tanks. Attempts of units to attack the defenders of the bridge over the Rocky River on Highway 200 should have been made dismounted.

"102. Failure to have infantry on hand to protect tank elements at objectives tended to nullify the effect of the success achieved by the tanks.

"103. Failure of the leading element of a column to maintain liaison with engineers constructing ponton bridge prevented these elements from starting crossing as soon as bridge was completed.

"104. The posting of air guards on trucks ready to fire on hostile aircraft was exceptional.

"105. The infrequency of instances where elements of armored columns jammed up on preceding elements showed a marked improvement in march control.

"106. Advantage of halts was not uniformly taken to perform first echelon maintenance inspection of vehicles.

"107. Traffic guards were not always provided at halts. Liaison was not always maintained between columns.

"108. Security of tank elements continues inadequate whenever infantry is not provided them. Such failure plays into the hands of tank destroyer units.

"109. March discipline deteriorated on the last two days of the maneuver.

"110. The generally effective concealment by daylight 18 November of most units in newly occupied assembly areas after a night withdrawal showed effective leadership.

"111. Antitank warning means within armored units appeared non-existent. A GHQ Tank Battalion reached the tail of an armored element without any knowledge on the part of that unit.

"112. When armored task forces are formed for semi-independent missions, they should be so constituted as to be as nearly self-sufficient as possible. Lack of infantry was especially noted in many such forces.

"113. Coordination of action within divisions was effective except during the armored operation around the north flank of the First Army, when units became ineffectively dispersed."

Section VIII

Antitank Defense

"114. Instances were observed early in the maneuver when plans for the employment of antitank units of various echelons were not coordinated. Better coordination was observed as the maneuver progressed. Coordination is essential if effective antitank defense is to be had.

"115. Gun positions were noted from which effective fires could not have been delivered. Many gun positions were excellently located for fields of fire and concealment.

"116. The value of attaching observation aviation to large antitank units was demonstrated on 18 November when one group received information of the advance of the 1st Armored Division one hour and forty-five minutes before it received such information from the commander under whom it was operating.

"117. Failure to provide march security was observed on one occasion. This resulted in elements of an antitank group running headlong into tanks.

"118. Jamming of vehicles on the roads was frequent.

"119. Little use was made of the engineer elements of the antitank units, or of road blocks, demolitions, and mines by these units. Despite the desire for offensive employment of these units, defensive measures especially for local defense are of material aid in enhancing the effectiveness of the guns.

"120. Little attention was paid to concealment in many units. There was a strong tendency to place guns near landmarks such as crossroads, buildings, and small woods, thereby assisting opposing artillery and combat aviation in locating them.

"121. The major use of antitank mines occurred in temporary road-blocks because both forces had offensive missions. The use of mines in extensive mine fields was negligible. In general, all units observed using antitank mines need training in the tactics of their use and the technique of handling and placing them.

"122. The use of natural obstacles, reinforced by engineer tasks, to restrict tank movement was confined almost entirely to demolition of bridges and blowing road craters. The value of many of these demolitions was practically lost because of failure to defend them.

"123. In general, antitank warning systems were excellently planned and warnings of tank threat promptly given. In some units this important service has not received proper attention.

"124. Throwing of articles at armored vehicles other than the permitted bags of flour was reported on several occasions. This conduct is not only dangerous, but high reprehensible. A tank driver was reported burned severely about the eyes as a result of a smoke grenade which was thrown through the open driver's port of his tank".

Section IX

Air Force

"125. Observation aviation was used less skillfully than other classes of aviation. Then tendency persists in stating observation missions in general terms. Missions to aerial observers must be specific in asking for the information desired. In order to get information quickly only small demands should be made in any single mission. Light observation planes were often flown over enemy territory for which they are built. Observation planes frequently flew too low for safety from antiaircraft fire. On one day, 60 observation planes out of 51 which were maintained in commission by one force were reported shot down by antiaircraft fire. This indicates disregard of tactical doctrine by observation pilots.

"126. Long term and strategic considerations were subordinated to the immediate air support needs of the ground forces on both sides in this maneuver. Where the play is known to be of short duration and losses in personnel and planes are replaced each midnight this is inevitable. In reality the hostile air force would receive much more consideration and commanders would pay more attention to the conservation of their air strength.

"127. Bombardment was used aggressively by Red from the start in a manner to impede the Blue advance, while Blue withheld his bombers initially. In the latter part of the phase both sides attacked enemy airdromes as well as objectives in the battle area.

"128. Pursuit was used normally, except that more use was made of it for attacking ground objectives than probably would have been justified in a real situation. Use was also made of pursuit on photographic and air force reconnaissance missions, as has been found necessary in the war abroad."

Section X

Antiaircraft Defense

"129. Our ground troops are not sufficiently air conscious. Personnel continues to look skyward at airplanes, either passing over or attacking. Columns of closely spaced vehicles, both moving and halted along the road frequently were seen. During daylight and under the constant threat of hostile air attack such conditions invite devastating attacks.

"130. The posting of antiaircraft lookouts with an adequate warning system must be habitual. In some units an inadequate warning system was noted. The result of failure to provide adequate warning measures may be excessive losses in equipment, material, and personnel.

"131. Both armies made a commendable effort to provide antiaircraft artillery defense for important elements or installations in forward areas.

"132. Dispersion and concealment by antiaircraft units were generally excellent throughout the area. In some cases, fire units were too elaborately camouflaged to permit prompt engagement of either aerial or ground targets. On the other hand, some elements made little or no attempt to camouflage their weapons. The maximum camouflage consistent with instant readiness for action should be the rule. The camouflage of outriggers should receive particular attention.

"133. In many cases weapons were emplaced in low areas or near the edge of woods where fields of fire were lighted when positions in open areas or on commanding elevations were available.

"134. There is a tendency to emplace gun batteries too far from the objective being defended, particularly when there is a threat of attack by dive bombardment aviation. Fire control instruments, battery command posts and guns in some instances were so widely separated that control was difficult or impossible.

"135. In general, motorized movements were well timed and executed. However, several instances of unsatisfactory execution were noted both by antiaircraft and other units.

"136. Most of the antiaircraft batteries opened fire and continued firing without due attention to accuracy of fire and economy of ammunition. Action in preparation of fire, equipment and material was simulated to an unnecessary and undesirable degree. Plans for fire direction in some cases were inadequate. Some batteries lacked a well-ordered plan in the battery whereby each officer and man has a specific task to accomplish during every operation. A few instances were noted where units failed to take advantage of an excellent opportunity for further training.

"137. Many antiaircraft units carried unnecessary and unauthorized articles of equipment to camp and in some cases to tactical positions."

Section XI

Engineers

"138. Additional training is needed in the tactics of using antitank mines and in the technique of handling, placing and concealing them.

"139. Engineer reconnaissance needs added emphasis and must be pushed with greater vigor.

"140. Preparations to repair or replace vital bridges must be included in engineer plans when a bombing threat exists.

"141. Six ponton bridges were constructed during the maneuver. These were of material aid in crossing the two large rivers in the area. Sites chosen for these bridges were excellent. The construction was carried through with commendable speed.

"142. Ferries played a part in helping the First Army cross the Pee Dee River. This method of crossing is always much slower than using a bridge.

"143. No conclusive test was made of the ability of engineer troops to supply water to their units because many municipal water sources were used.

"144. The necessity of road repair was at a minimum due to fine weather and lack of enemy activity against roads.

"145. There was a noticeable lack of technique in the computing and placing of demolition charges.

"146. Obstacles constructed were seldom defended. The possibilities of delay were thereby greatly decreased.

"147. No simulated antipersonnel mines were observed in conjunction with other obstacles.

"148. Engineer supply was adequate for maneuver purposes, but engineer units failed to get much training in supply of engineer materials."

Section XII

Signal Communication

"149. Signal communication in general has shown a marked improvement.

"150. In some organizations a very satisfactory relationship exists between the signal officer and other members of the staff, particularly G-3. Such relationship results in plans well made and projected sufficiently far in advance to insure uninterrupted signal communication. In some organizations, however, this relationship does not exist. The signal officer is frequently forgotten or ignored until signal communication failure is evident.

"151. The practice is growing of maintaining two or more command posts at one time. Such practice not only dissipates signal personnel and equipment, unnecessarily, but also confuses messengers, liaison officers and others whose business requires them to visit command posts. Confusion in a staff also arises when orders and instructions emanate from more than one command post.

"152. SOI's are being distributed in book form (all recipients receive all items) by some higher headquarters. As a result, those items issued by higher headquarters which are applicable to lower units must be reproduced by lower headquarters to provide distribution within their organizations. Time is not normally available in field operations for lower headquarters to make such reproductions. Moreover, distribution of SOI's in bound book form endangers the security of items such as code supplements and cipher keys which are used to safeguard vital information.

"153. Security of documents must be stressed. Captured orders, codes and cipher keys are of great value to an enemy. In one instance a division staff officer was captured with the SOI of his division in his possession. There is no apparent reason why he should carry a copy.

"154. A universal cipher published by one large command was so simple that it was readily broken down. Use of a simple system provides greater deception to the user than to the enemy. It delays the proper delivery of messages but affords no great difficulty for an alert enemy.

"155. Message writers frequently specify the means by which their messages are to be sent. This not only frequently results in delay but it may unnecessarily endanger security measures.

"156. Much improvement is necessary in radio discipline. In one instance instructions by the net control station of one large unit were disregarded by stations in the net so that it required 28 minutes to transmit a 23 word message. Much useless radio transmission is being carried on in voice. Messages may be handled more rapidly by use of the key. Messages which could be sent by use of abbreviated code are frequently sent in the clear, thereby divulging important information to the enemy.

"157. Radio operators require much additional training. In general, the number of qualified operators is wholly inadequate for the proper operation of the radio nets employed.

"158. Wire lines are not always properly tagged. Field wire was noted laid on a road and draped on bushes and fences. Wire must be either flat on the ground or supported sufficiently high to clear any possible transportation. Wires entering command posts must be buried or in the air, to prevent interference with individuals and transportation.

"159. For the success of signal communication it is essential that in divisions and higher headquarters at least one future location of the command post be known sufficiently ahead of time to permit reconnaissance of the new location and establishment of communication facilities there before closing the old location."

Section XIII

Supply and Evacuation

"160. Special quartermaster units (for example shoe repair and sterilization and bath) should have reverted to army control for this phase to secure full use of their capabilities.

"161. In some instances too many depots were located in one locality, causing traffic congestion.

"162. The bakery companies are commended for their excellent organization, efficient operation and excellent bread.

"163. A surplus stockage of forage was placed at one railhead and some of this forage is being lost by spoilage.

"164. In general, the ration appears to be exceedingly ample and well balanced.

"165. In general, railheads are efficiently operated and blackout restrictions are well observed. Some units were moved and thereby lost out on some deliveries, but this will be normal in war.

"166. Both forces issued 'B' and 'C' emergency rations when regular delivery was impossible or impracticable. This will be normal in war and is excellent training. This was particularly true of cavalry, armored force and antitank units.

"167. In both forces, requisitions were to be sent through Army Quartermasters, but companies and regiments sent requisitions and trucks for Class II supplies direct to depots at Fort Bragg and Fort Jackson. This resulted in unnecessary inconvenience at the depots and a wastage of time and transportation. It also resulted in partial loss of control by the Quartermaster, First Army, and Division Quartermasters in the IV Army Corps.

"168. In general, the supply of gasoline and lubricants was excellent. There was shortage of cans at some gasoline supply points.

"169. In a few instances, poor cover and concealment existed at gasoline railheads. Fire protection is poor at many railheads and smoking restrictions are not rigidly enforced.

"170. Many tanks were observed *in action* carrying filled gasoline cans outside the tank turret. This dangerous and unreal practice cannot be continued in actual combat.

"171. In general, allocations and simulated hauling of ammunition were well carried out.

"172. The supply of spare parts is satisfactory. Light maintenance companies were grouped too much in one instance. They should have been distributed laterally and in depth in order to provide better maintenance service to the organizations served.

"173. Motor maintenance is a command function. At least 50% of the 3d and 4th echelon maintenance was caused by unsatisfactory 1st and 2d echelon maintenance.

"174. In many organizations, drivers and vehicles are being overworked. Sufficient time is not allowed for the performance of 1st and 2d echelon maintenance.

"175. The number of artificial casualties evacuated has been encouraging. The realism in handling these patients and the splinting and bandaging observed, are worthy of praise.

"176. The care of sick has been excellent. The speedy removal of over 4,000 sick or injured men from the field to the rear where they have received proper treatment has been carried on effectively."

Section XIV

Prisoners of War and Replacements

"177. PRISONERS OF WAR. — *a.* 6,387 prisoners were exchanged through the prisoner of war exchange. Both Red and Blue prisoner of war inclosures were organized and operated with commendable efficiency. In fact, prisoners were so well cared for in prisoner of war enclosures that reluctance to leave them was noticed in some instances.

"*b.* Upon completion of the first phase, instances occurred in which units holding prisoners released them to find their own way to their units instead of processing them to prisoner of war enclosures of the First Army or of the IV Army Corps as required by current instructions. Such thoughtless action can not be condoned.

"178. REPLACEMENTS. — *a.* During the period November 16 to 20, replacement depots processed replacements, including casuals, in the following number:

First Army Replacement Depot.....3,282
IV Army Corps Replacement Depot.....2,463

"*b.* Both replacement depots were organized and operated in a very creditable manner."

Section XV

Miscellaneous

"179. The provisions of the land lease did not permit the digging of fox holes or emplacements. However, it was noted that at one command post, each individual was required to outline a fox hole and post it with his name. This procedure is most commendable.

"180. There were isolated instances of fires at night, some in close proximity to the enemy.

"181. Frequently vehicles were parked in the vicinity of command posts and other installations so that their windshields reflected the sun's rays.

"182. General laxity exists in many units in maintaining proper identification of personnel and vehicles. It is expected that this deficiency will be corrected before the next phase of the maneuvers.

"183. Two instances are on record where enlisted personnel armed with the .45 caliber pistol had live ball ammunition in their possession. It is a command responsibility that thorough inspections are made to prevent such occurrences.

"184. The spirit and enthusiasm displayed by all ranks are worthy of special note."

SECOND AND FINAL PHASE

At the second and final phase critique, held 30 November, during which General McNair also made an address, he expressed the following conclusions:

"As I look back on the nation-wide series of maneuvers such as these here, and review the mass of comments of all kinds which have been made, certain features of the picture stand out, among them:

"The irrepressible cheerfulness, keen intelligence, and physical stamina of the American soldier. He is indeed an inspiration and a challenge to his leaders. He will follow them anywhere, and asks only that they bring him success and victory.

"Imperfect discipline of the type which makes the individual subordinate himself to the advantage of his unit, be it large or small; that is the type which is vital for success in war.

"DISREGARD OF THE AIR THREAT. — Columns moved closed up when experience shows beyond question that disaster would result under war conditions. It is clear that revision of the umpire manual must include putting vehicles out of action as a penalty for air attack and artillery fire.

"Inadequate reconnaissance, and security, although there is slow improvement.

"The small proportion of units which is brought to bear against the enemy, due to reluctance to leave roads and column formation.

"The question is asked repeatedly, 'Are these troops ready for war?' It is my judgment that, given complete equipment, they certainly could fight effectively. But it is to be added with emphasis that the losses would be unduly heavy, and the results of action against an adversary such as the German might not be all that could be desired. In spite of the remarkable progress of the year just past, there must be no idea in anyone's mind that further training is unnecessary. There is a limitless field of endeavor in correcting faults developed and in perfecting and finishing training. The fact that faults persist is not a reflection on your efforts so much as it is a practical demonstration that properly trained units can not be developed in one year.

"The general policy as to further training has been announced. The immediate procedure is a return in full force to small unit training, in a determined effort to raise the training ceiling far above that attained heretofore. It is true that our previous small unit training was limited, because the term of service of the National Guard and of selectees was set at one year initially. It is true also that the training failed to produce maximum results because many officers themselves were insufficiently trained. With the greatly improved commissioned and noncommissioned standards now prevailing, it is readily possible to reach standards of training which were impossible last year irrespective of the time available.

"It has been anticipated by some that to return to primary training after the college education here on the maneuver field will bring about a state of bored indifference on the part of the troops. Results of this character will depend entirely on the capabilities of officers. If they have the initiative, energy, and skill to carry training into new territory of interest and profit, the soldier will reach for it without fail, for he must realize that he has made mistakes and lacked skill in many ways during these maneuvers. The coming months of review training are a challenge to leadership. It is not pep talks and verbose programs which will count, but rather skill in the practical conduct of training, based on solid knowledge on the part of both commissioned and noncommissioned leaders.

"During the past year, equipment has been largely either missing or new. Comparatively little effort has been required in order to maintain it in at least usable condition. Now that picture is changed, and care of equipment of all kinds — especially transportation — assumes major proportions. An accumulation of neglect, due to field conditions, must be faced energetically and all echelons trained thoroughly in maintenance.

"Standards of discipline and smartness manifestly can and must be raised. With the high class of personnel now in service, it is readily possible to reach or excel the well established peace-time standards of the regular service."

Library Bulletin

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Austin, F. Britten. — **Forty centuries look down.** A novel.

Benoist-Mechin, J. — **History of the German Army since the Armistice.** Vol. I: From the Imperial Army to the Reichswehr. (Translation from the French)

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Crow, Carl. — **Meet the South Americans.**

Dark, Eleanor. — **The timeless land.**

DeWeerd, H.A. — **Great soldiers of the two World Wars.**

Falls, Cyril. — **The nature of modern warfare.**

Federal Register. Vol. 5, November 1940; Vol. 6, January-May 1941.

Federal Reporter, Second Series. Vol. 119 F. 2d; Vol. 120 F. 2d.

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Ferrero, Guglielmo. — **The reconstruction of Europe.** Talleyrand and the Congress of Vienna, 1814-1815.

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Hackett, Francis. — **What Mein Kampf means to America.**

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Harsch, Joseph C. — **Pattern of conquest.**

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Koht, Dr. Halvdan. — **Norway: Neutral and invaded.**

Kraus, René. — **The men around Churchill.**

Lane, Carl D. — **What the citizen should know about the Merchant Marine.**

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Macmillan, Captain Norman. — **Air strategy.**

Major, Ralph H. — **Fatal partners: war and disease.**

Marshall, S.L.A. — **Armies on wheels.**

Maugham, W. Somerset. — **Strictly personal.**

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Rauschning, Hermann. — **The conservative revolution.**

Richmond, Admiral Sir Herbert:

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Russell, William. — **Berlin Embassy.**

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Schiller, A. Arthur. — **Military law and defense legislation.**

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Sorokin, Pitirim A. — **The crisis of our age: the social and cultural outlook.**

Spaight, J.M. — **The battle of Britain, 1940.**

Stacey, Charles Perry. — **Military problems of Canada.** A survey of defense policies and strategic conditions past and present.

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Strategicus. — **From Dunkirk to Benghazi.**

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Thordarson, Björn. — **Iceland, past and present.**

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"Wing Adjutant" (Major W.T. Blake). — **Today with the R.A.F.**

World Almanac and book of facts for 1941.

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Ybarra, T.R. — **Young man of Caracas.**

BOOK REVIEWS

GENERALS AND GENERALSHIP

By General Sir Archibald Wavell

36 pages . . . New York: The Macmillan Company

A series of lectures delivered by General Sir Archibald Wavell at Trinity College, Cambridge, in 1939, provides the subject matter for this very interesting book. The lectures cover such subjects as: "The Good General," "The General and His Troops," and "The Soldier and the Statesman."

This highly readable book will prove interesting to General Officers—should be required reading for every Staff Officer.

THE FIGHT FOR THE PACIFIC

By Mark J. Gayn

378 pages . . . New York: William Morrow & Company

The author, born at Barim in Mongol China, has covered the Orient in a varied journalistic career. The machine-gun assassination of his first employer, the Chinese editor of a little English daily, took him to the desk of the Editor of the English Department of the Japanese semi-official Ringo News Agency, later the official Japanese Domei News Agency. He served as special correspondent in China for the *Washington Post.* His last Asiatic assignment, News Editor of the *China Press,* a Shanghai American daily, was terminated by a raid of pro-Japanese gunmen.

The Fight for the Pacific is not a military text and is of no professional benefit except insofar as Japanese military and naval operations are treated from the layman's viewpoint as the means of effecting political aggression. In it, the author sets forth his view of what he calls the six-year transition from feudalism to advanced capitalism; her ambitions and world aims; the army domination of her public opinion, economic structure and social habits; the cause and effect of her operations on Britain, Russia, China and the United States; and, the principles and record of her aggression, her politicians, generals and admirals, and the strength, training, discipline and philosophy of her military.

The book contans very little new material but it is well written, easy to read and interesting. It is a grand review of Far Eastern current events for those of us who remember such "incidents" as the Marco Polo Bridge incident; the machine-gunning of Sir Hughe Montgomery Knatchbull-Huggessen; the sinking of the *U.S.S. Panay;* the blockade of Tientsin; the Burma Road; and the Kidnapping of Chiang Kai-shek, but who have too soon forgotten the underlying reasons therefor.

The author concludes: "Japan knows her hour has arrived, and she will strike tomorrow, next week, perhaps next month. And when she strikes, her foe will be these United States."

LEADERSHIP—FOR AMERICAN ARMY LEADERS

By Major Edward Lyman Munson, Jr.

96 pages . . . Washington: The Infantry Journal

The value of this book on *Leadership* can best be made known to the readers of the *Military Review* by quoting Brigadier General E. F. Harding, U. S. Army, former editor of the *Infantry Journal:*

> "The need for a brief, understandable, common sense handbook on leadership became urgent with the initiation of our present armament program. Before that there was time for junior officers and young noncommissioned officers to learn how to handle men by the trial-and-error method. Mistakes made resulted in no great harm since experienced senior officers and long-service noncoms were on hand to correct them promptly and put the young shavetail or corporal on the right track. By the time the gold bars turned to silver and the two stripes to three, the wearers had usually learned enough of the essentials to make a favorable showing as leaders.
>
> "We cannot afford to train our junior leaders in such leisurely fashion today. Fortunately Major Munson has provided a timely and powerful aid to speeding up the process. He has given us just what the doctor ordered in this monograph on leadership—the most practical, sanely balanced and usable treatise on the subject that is available for those whose business it is to know, train and lead soldiers.
>
> "Major Munson's book is primarily for junior leaders but it is more than that. Commanders of all grades —even the highest, if their minds have not taken on a permanent set—will find it useful as a check against time-honored practices that may be outmoded or which may never have been sound.
>
> "In view of the imperative need to train and train quickly a great army of subordinate leaders and the usefulness of this book to that end, it is not too much to say that *Leadership for American Army Leaders* is the most important literary contribution to National Defense that has come off the press since America began to arm. It should be read, re-read and pondered by every soldier in authority over others."

JAPAN UNMASKED

By Hallett Abend

322 pages . . . New York: Ives Washburn, Inc.

The author, who has spent some fifteen years in China and Japan, correspondent for the *New York Times* and now is home on leave has been aptly called an "Information Please," as regards Japan-in-China. His book is replete with factual information but not boring with statistical de-

tail. To read this book is to acquire a convincing picture of the balance of strength as between Japan and China, a view of what appears to be Japan's thrust for empire.

Among the most informative material in the book is that depicting British and Dutch preparations to meet the threat of a Japanese advance further southward. His descriptions of Singapore and the Dutch East Indies are in themselves worth reading.

The book is, no doubt, well classified as one of the best in its field "as a guide to the Japanese mind." Mr. Abend has injected just enough of his personality and own work—that of foreign correspondent—into this book to add entertainment to the general interest he arouses in his subject.

INSIDE LATIN AMERICA

By John Gunther

498 pages . . . New York: Harper & Brothers

Enough interesting description of important circumstances, customs, occupations, politics and propaganda to give the reader a basis for an understanding of our neighbors to the south appears in Mr. Gunther's book. It unlocks the door to hemisphere defense activities, pointing out the status of intra-American relations.

The author chooses the essential facts and states them, chooses essential personalities and sketches them. He writes with a combination of informality, simplicity and enthusiasm. The viewpoint of the historical writer is evident.

GREAT SOLDIERS OF THE TWO WORLD WARS

By H. A. DeWeerd

378 pages . . . New York: W. W. Norton & Company

This book presents descriptive and explanatory biographies of great leaders of two world wars. The biographies are not complete in one respect: they are not comprehensive enough to include a complete narrative of the lives of the officers, but are limited to the chief points of the outstanding careers, particularly those points deemed by the author as essential to interpret the military attainments. The author's purpose apparently is to explain certain human characteristics that have greatly contributed to military success.

The individuals chosen to represent German arms in the first World War are von Schlieffen, creator of the famous plan which bears his name; Hindenburg, the symbol of German military attainments; and Hoffman, the leading man of ideas on the Eastern Front and perhaps the most accomplished staff officer of the German Army. Britain is represented by the constrasting figures of Kitchener and Lawrence; and America by General Pershing, who is appraised in the light of his extraordinary administrative achievement.

Bridging the transition between two wars is a portrait of Petain, which will go far to explain his tragic position today; following are Gamelin, called upon to fight the second World War with the ideas and weapons of the first; Wavell, who really read the lessons of the past and applied them; and Churchill, embodiment of the British war effort, who is seen as soldier, not as political leader, in a unique interpretation of his fundamental military concepts. Finally comes Seeckt, the man who laid the intellectual and material basis for the modern German Army and made possible the instrument which Hitler—who is treated in the last portion as a military genius—hurled against the continent of Europe. Some of the successes of the German forces in the second World War are depicted as the consequences of Hitler's innovations in the application of fundamental military strategy.

BUILDING AN ARMY

By Edward S. Johnston, *Lieutenant Colonel, Infantry, U. S. Army*

159 pages . . . Harrisburg, Pa.: The Military Service Publishing Co.

The book is written in as popular a style as seemed possible to the author, in order to inform the citizens of the United States concerning the building of an army. The author says that less ignorance on the part of editors, reporters, commentators and other "experts" would do away with much of the confusion caused by misstatements.

The material of the book is organized around five topics: (1) Fundamentals, including mobilization (2) Personnel and related subjects (3) Military intelligence and related subjects (4) Organization and training and related subjects (5) Supply and related subjects.

The conclusion offers advice to Mr. and Mrs. Citizen as to the positive things they may do and the "don'ts" which they are not to do if they are to do their share in the fight "to preserve the country and hold it together through whatever good or ill fortune may come".

NOT ALL WARRIORS

By William H. Baumer, Jr.

313 pages . . . New York: Smith and Durrell

The author teaches history at the United States Military Academy at West Point. The book contains brief biographies of some outstanding West Point graduates: (1) James McNeill Whistler, a very excellent American painter, (2) Edgar Allen Poe, famous writer, (3) Jefferson Davis, the head of the Confederate States, (4) Horace Porter, a diplomat, (5) Henry du Pont, manufacturer, (6) Leonidas Polk, the fighting bishop of the Confederate States, and (7) Benjamin Louis Eulalie Bonnerville, an explorer. For one who seeks inspiration from biography, this book is good. Also it furnishes useful historical information.

NOSTRADAMUS

By Lee McCann

421 pages . . . New York: Creative Age Press

At present, the prophecies of Nostradamus, a sixteenth century physician who uncannily saw through time, are of growing interest. The predictions of this man have amazed millions because of their accuracy in foretelling, among other things, the present war and its outcome.

It is a fictionalized biography written in such manner to make it difficult to separate fiction from fact. The author sets forth first the interesting background of the man whose predictions have suddenly come into prominence, and then the prophecies, in their original form, are stated by the author with many possible clues for interpretation of the prophet's verses.

HE'S IN THE ARMY NOW

By William H. Baumer, Jr., *Captain, U. S. Army*

254 pages . . . New York: Robert McBride and Company

This book endeavors to point out to the civilian reader how a typical volunteer or selectee is taken through the reception center, the replacement training center, and then how he is trained as a member of a team of a particular branch of the army. The first part of the volume is written about the soldier and his acclimatization to army procedures and routines. The last part of the volume is written about the various branches of the army and is in a style easy for the civilian to understand the types of military service involved in each individual arm and service.

In fictional style—told both in text and pictures—the process of orientation into the army is related from the begining of a recruit's induction until the time when he prepares for maneuvers. This book shows that the modern army is a machine-age product with numerous complexities and specialties. It also shows how the modern soldier, through the intensified training that he gets, is qualified, trained, and physically fit for his army obligations.

MY NEW ORDER

By Hitler

987 pages . . . New York: Reynal & Hitchcock

A sequel to *Mein Kampf*, this new book is a collection of Hitler's speeches set in a running commentary. The editor of this volume has attempted to eliminate the reiterations and inconsistencies found in the various utterings of the Nazi fuehrer, and in doing so has shown the Hitlerian methods, which are fairly constant, though the immediate objectives have changed with confusion.

From the mass of verbiage that has been spoken by Hitler, the editor has selected only what he regards significant and important in the proper understanding of Hitler's strategy. For the reader's benefit, the speeches have been presented in chronological order and have been divided into chapters and phases which correspond to the historic development of the past twenty years. Each chapter is preceded by an explanatory comment. A running chronology of world events places each speech against its proper background.

HITLER CANNOT CONQUER RUSSIA

By Maurice Hindus

299 pages . . . Garden City, New York: Doubleday, Doran & Co.

The Ukraine, central and north Russia—Kiev, Rostov, Leningrad, and Moscow—all may fall to the Nazi onslaught, according to this author, but Hitler will never conquer Russia. This belief he substantiates in declaring that Russia has the steel for the war and the bread and, above all, the will and the determination to fight and die rather than submit to defeat.

In stating the case for Russia, Mr. Hindus attempts to disprove theories about Soviet internal weakness in morale, in military might and everything else that makes for a nation's fighting power. In doing so, he depicts the Russian earth and Russian humanity as they are today and the forces within them, recent and past, that make a foreign military victory seem virtually impossible.

ARMIES ON WHEELS

By S. L. A. Marshall

242 pages . . . New York: William Morrow & Co.

This is the second volume by the same author on the tactics of modern "blitz" warfare. The first book entitled "*Blitzkrieg*," published in November 1940, is an analysis of the battles of the present war in Poland, France and Norway, to and including the Battle of Britain for the months of May and June, 1940. The author felt it a necessity to discuss mechanized power as critically tested for the first time by the three great obstacles to the advances of all armies—"large rivers, chains of mountains and deserts."

Drawing liberally from many recent military articles, he attempts to show the nature of mechanized force in the military operations that have taken place since the summer of 1940. The necessity for greater mobility of an army precludes the fact that the army needs perfect coordination and integration between units. In light of this, the author through his discussion of the use of tanks in the desert, mountainous warfare, and problems in the Russian campaign, advocates a close tieup between infantry and artillery, and is against a completely independent air force.

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THE "GROUND STRAFING" FIGHTERS
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THE DEFEAT OF THE FRENCH AIR FORCE. (III) Pierre Cot

ARMY ORDNANCE

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WORLD LEADER IN GUN MAKING. WATERTOWN ARSENAL CONTINUES A RECORD OF 125 YEARS. Brigadier General R.W. Case

ARSENAL CRAFTSMEN. TRAINING CIVILIANS AT ROCK ISLAND ARSENAL. Brigadier General N.F. Ramsey

SMALL-ARMS AMMUNITION. RECORD PRODUCTION SPEED-UP AT FRANKFORD ARSENAL. Colonel James Kirk

NEW WINGS FOR THE ARMY

IRREGULAR WARFARE. THE RÔLE OF IRREGULAR TROOPS IN MODERN CONFLICT. Hoffman Nickerson

THE 40-MM. ANTIAIRCRAFT CANNON. THE LATEST AUTOMATIC CANNON. THE LATEST AUTOMATIC WEAPON NOW IN PRODUCTION. Major Daniel J. Martin

LUBRICATION. THE ESSENCE OF ORDNANCE OPERATION AND MAINTENANCE. Captain George H. Schoenbaum

THE MACHINE GUN — ITS EARLY APPLICATIONS. Part II. Lieut.Colonel Calvin Goddard

ARMY QUARTERLY (Great Britain)

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THE SECOND GERMAN WAR (JULY-AUGUST, 1941). Lieut.Colonel H. de Watteville

A SHORT GENERAL SURVEY OF THE WAR BETWEEN FINLAND AND RUSSIA IN THE WINTER OF 1939-40. Major T. Peitsara, of the Finnish General Staff

TWENTIETH-CENTURY IRREGULARS. Lieutenant A. Stuart Daley

LESSONS FROM THE LEVANT. Major-General H. Rowan-Robinson

THE WAR AT SEA (MAY-JULY, 1941)

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CLAUSEWITZ ON THE DEFEAT OF JENA — AUERSTÄDT

SMOKE WARFARE. Captain W.R. Young

MARCH DISCIPLINE, AN ABBREVIATED TRANSLATION FROM THE GERMAN

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GUERRILLA WARFARE IN CHINA. Captain James B. Griffith

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AN IDEAL CAVALRY-INFANTRY TEAM. Captain Bruce Palmer, Jr.
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MAKING MOTOR SOLDIERS. Lieutenant Allan G. Crist

CAVALRY JOURNAL (Great Britain)

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NOLAN AND BALAKLAVA. Captain F.C. Hitchcock
THE WAR. APRIL-JUNE, 1941. By Observer

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FIFTH (ROYAL IRISH) LANCERS. Captain F.C. Hitchcock
THE WAR FROM JULY TO SEPTEMBER, 1941. By "Observer"

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ON THE MOBILITY OF BASE DEFENSE ARTILLERY. Lieutenant R.D. Heinl, Jr.
THE SQUAD AUTOMATIC. Captain Melvin M. Johnson, Jr.

MILITARWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

August 1941

BLOWS TO BOLSHEVIST THREATS OF ATTACK. MILITARY AND POLITICAL REVIEW TO 26 JULY 1941.
[Schläge gegen die bolschewistische Angriffsdrohung. Wehrpolitische Übersicht, abgeschlossen am 26. Juli 1941.] Major General Paschek

This article deals with the war with Russia, the war with England and in the southeast and with general defense developments. In the operations of the war with Russia are given the German description of the pursuit to the Stalin Line, the breakthrough and the smashing of the hostile counterattacks, from German point of view. German naval superiority in the Baltic is also discussed. The occupation of Iceland is discussed among the defense developments.

CONTEMPORARY DEFENSE SKETCHES. THE SOVIET UKRAINE.
[Wehrpolitische Skizzen zum Zeitgeschehen. Die Sowjetukraine.] Colonel Mlaker

The agricultural, mineral and industrial worth (larger than France and Belgium combined), as also the size of the Ukraine, are vividly described in this short article. An accompanying sketch shows the sources of iron ore, coal, silver, and other minerals as well as oil in the Ukraine, which is described generally as the "breadbasket" (Kornkammer) of Russia.

EGYPT IN WORLD POLITICS.
[Agypten in der Weltpolitik.] Captain Handel-Mazzetti

THE 40-YEAR BATTLE FOR MOSUL.
[40 Jahre Kampf um Mossul.] Dr. Walter Flemmig

This article discusses the struggle among the various leading nations of the world to acquire controlling oil rights. Dealing with Turkey by Germany, England, the United States and France are recited spiritedly, with emphasis on the rivalry that has existed on this subject for four decades.

THE GERMAN-TURKISH ARMS AGREEMENT OF THE WORLD WAR.
[Das deutsch-türkische Waffenbündnis im Weltkrieg.] Major General Lauppert

September 1941

THE CRUSHING OF RUSSIAN MILITARY POWER. MILITARY AND POLITICAL REVIEW TO 27 AUGUST 1941.
[Zerschlagen der Sowjetwehrmacht. Wehrpolitische Übersicht, abgeschlossen mit 27. August 1941.] Major General Paschek

In this article the crushing of the Stalin Line is discussed with particular regard to the action against Leningrad, the victory at Smolensk and the enflanking of the west Ukraine, as well as the advance along the Dnieper and beyond Gomel. Other engagements mentioned are the offensives along the northern Russian front and those in the Baltic. The English-Russian activity in Iran, the north African situation, as also a general discussion of the international situation are included in the discussion.

EGYPT IN WORLD POLITICS.
[Agypten in der Weltpolitik.] Captain Handel-Mazzetti

CONTEMPORARY DEFENSE SKETCHES. THE U.S.A. BUILDS THE NICARAGUA CANAL.
[Wehrpolitische Skizzen zum Zeitgeschehen. Die USA. bauen den Nikaraguakanal.] Colonel Mlaker

With the aid of a sketch, the author's article endeavors to outline the history of the United States' relations in regard to its interest in a canal in Nicaragua, dating since 1916. He states that the "possible threat from Europe" may considerably speed up the original construction period estimated at from 5 to 6 years. Also emphasized in the article by the author is the strategic importance of another canal, to supplement the Panama. Of the latter, he observes that a number of by-passes are under construction along locks of the Panama Canal, in order to prevent possible interruption of traffic in the present canal.

MILITARWISSENSCHAFTLICHE RUNDSCHAU (Germany)

September 1941

STATESMAN AND COMMANDER IN CHIEF IN ONE.
[Die Einheit von Staatsmann und Feldherr.] Colonel Scherff

This article is an abstract taken from an address delivered by Professor Reinhard Hohn, 4 February 1941, at the Institute for State Research at Berlin University. It is a philosophical discussion to demonstrate the desirability of embodying in a nation's leader the characteristics simultaneously of statesman, in strict political sense, with those of the supreme military leader. Such leader would, it is granted, be a dictator. But, contends the author, such dictator would have the best interests of his people at heart. Frederick the Great, it is stated, was such leader, while General Ludendorff attempted to take over leadership from what is termed a group of incompetent politicians, but failed. Other historical references are made. In the present day, the leadership under Adolph Hitler, according to the article, represents

the embodiment of the combined statesman-military commander leadership (Einheit of leadership) which is best for the German people.

SELECTION AND PLACING OF COMMANDERS IN WAR, AND MILITARY JUDGEMENT OF THE FRONT.
[Führerauslese und Führereinsatz im Kriege und das soldatische Urteil der Front.] (II) Captain Erich Weninger

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MODERN TYPES OF FORTIFICATION.
[Moderne Befestigungsformen.] Colonel von Marnitz

THE CAMPAIGN IN NORWAY.
[Aus dem Feldzuge in Norwegen.] (II)

THE BATTLE FOR HILL 304.
[Der Kampf um die Höhe 304.]

MONOGRAPHS FROM THE BATTLES OF THE MOUNTAIN INFANTRY IN THE CONQUEST OF CRETE IN MAY, 1941.
[Schilderungen aus den Kämpfen der Gebirgsjäger bei der Eroberung von Kreta im Mai 1941.]

REVIEW OF THE OPERATIONS OF THE BELGIAN ARMY IN MAY, 1940.
[Ein Uberblick über die Operationen des belgischen Heeres im Mai 1940.]

MILITAR-WOCHENBLATT (Germany)

1 August 1941

A TANK BATTLE.
[Ein Panzergefecht. (Deutsches Soldatentum.)] Lance Corporal, 33d Tank Regiment

This describes the experience of an individual tank crew whose tank lost its radiator water and fuel too fast and caused the motor to overheat and stop. Had the spilled fuel been ignited with the least spark, it is observed, it would have been tragic for the crew. "One must have luck," is the general theme of the article. French tanks are repulsed and routed by the group of which this individual tank is one. The article inclines to develop the heroic and human interest, largely.

A MOTORIZED RIFLE COMPANY IN THE GREAT PURSUIT.
[Eine mot. Schützenkompanie in der grossen Verfolgung. (Deutsches Soldatentum).] Sergeant-Major Kraus, 11th Rifle Regiment

This is a vivid description of the German's fast movement south of the Maginot Line into southern France to take the bridge at Nevers. It also describes how the French natives reacted to the invasion. Upon the arrival of the Germans at Nevers, the French blow up the bridge. However, the article in its general heroic tenor, declares that the French had been routed.

BREAKTHROUGH OF THE STALIN LINE.
[Der Durchbruch durch die Stalin-Linie.] General Ludwig

The Stalin Line, about 2,000 kilometers long, following the course of the Dvina, Dnieper and Dniester rivers, extends from the Peipus Lake to the Black Sea. This alone is a considerable portion for an army of 5,000,000 men to defend. If these forces were distributed along the entire line, there would be but 2,500 men to a frontage of one kilometer, not forgetting that with this figure distribution in great depth must also be taken into account. Even though the entire front is threatened by an allied attack on a broad front, it must not be considered that the front is occupied equally throughout. Due to certain terrain features and highway and railway conditions, there will always be sectors that are threatened more than others. Such conditions affect the distribution of forces. However, with such a broad front, no defense can hold out unless strong and mobile reserves are available. Their rapid shifting is difficult on account of the poor railway conditions. Motorized forces are of much greater importance in the defense. A more effective defense might have been organized, had the entire Soviet Army prepared itself for defense within and in rear of the Stalin Line. But they chose rather to attack in order eventually to extend the World Revolution over all Europe. Therefore, they placed the bulk of their army, especially their most effective units and motorized organizations, massed closely in two groups, in front of the Stalin Line, and moved their combat aviation right up to the frontier. Consequently, the German command was given the opportunity to defeat these forces decisively in front of the Stalin Line, and almost annihilate them. This time the well-known skill of the Russians in retreat was rendered ineffective by the superiority of German strategy. The surviving masses withdrew in a rout to the Stalin Line. Evident were the defects of the strong motorization upon which the Soviets had placed such great hopes. During the attack, if motor vehicles became immobilized due to motor trouble or lack of fuel, they can move forward later, but in case of retreat they fall into the hands of the pursuing enemy. Thus in battle and during the retreat they lost the bulk of their tanks and transportation, equipment that would have played an important role in the defense of the Stalin Line.

Before the defense was completely organized the German command, by employing mobile units directly against critical points, was able to pierce this line. Credit must also be attributed to the brilliant and energetic leadership for its decision to assume the great risk involved in making the penetration, which was effected under circumstances differing entirely from those in the West during the previous year. Then the penetration was conducted from lines of departure which lay directly in front of the Maginot Line. This time, however, the objective was approximately 500 kilometers from the German lines of departure. According to accepted doctrine, before an attack against such a strong position could be initiated, a great amount of artillery and ammunition would have to be moved forward. This would have caused considerable delay and would have given the enemy the opportunity to organize his defense. To attack without such preparations involved great risk, which in its magnitude is excelled only by the glory which follows success. The accomplishment of the breakthrough required more than the mobile units alone. Infantry divisions were needed to roll back the flanks of the gap made by the breakthrough. Even though they had been delayed for three weeks, during which time they had covered about 500 kilometers under the worst conditions of weather and roads, they were on hand when needed. Such accomplishments are possible only when every man in the organization is determined to pledge his entire strength to the ideal for which he is fighting.

COOPERATION BETWEEN CAPTIVE BALLOONS AND OTHER WEAPONS, 1914-1918.
[Die Zusammenarbeit der Fesselballone mit den anderen Waffen im Weltkriege 1914-1918.] (III)

This is the concluding article in which it is brought out that captive balloons played an important and effective role in the conduct of World War I.

SOVIET RUSSIA'S TRANSPORTATION SITUATION AND HER ECONOMIC CAPABILITIES.
[Sowjet-Russlands Verkehrsverhältnisse und seine wirtschaftliche Leistungsfähigkeit.] Dr. Paul Ruprecht

In this article it is explained that while Russia has made strides in her industrial development, she has failed to keep pace with the development of her transportation systems, rail, highway and water. This has resulted in a failure to obtain raw materials when needed as well as in failure to facilitate the distribution of manufactured goods, the author contends.

THOUGHTS CONCERNING TRAINING IN A COMPANY OF FIELD TROOPS.
[Gedanken zur Ausbildung in einer Kompanie des Feldheeres. (Aus der Truppe — für die Truppe.)] Lieutenant Busold

In this article the author stresses the need for continuous training between active engagements in order to keep his unit, the company, in readiness for action as a homogeneous whole. Men who have seen action should not be bored with rudimentary details of training. Older men in the service are useful as leaders of small groups in instruction. Replacements should be trained as quickly and intensely as possible to overcome the feeling as being from "the reserves," he stresses. Specialists among the noncommissioned officers should be given regular troop training so that they may become alternate group leaders. Men from the ranks should be assigned such specialists, in turn, he suggests, so that they may become alternates to specialists. Through his noncommissioned officers, the author states, a company officer reflects his own personality to his company.

8 August 1941

THE CAPTURE OF CRETE.
[Die Eroberung von Kreta.]

WHAT WOULD A GERMAN CAVALRY CORPS HAVE MEANT IN THE BATTLE OF MONS?
[Was hätte ein deutsches Reiterheer für die Schlacht bei Mons bedeutet?] Colonel von Troschke

15 August 1941

CAPTURE OF THE GERMAN RAILROAD TROOP TRAIN BETWEEN LA CHARITÉ — MESVES, 17 JUNE 1940.
[Inbesitznahme der Transportzüge auf der Bahnlinie La Charité — Mesves am 17. Juni 1940.] Lieutenant Sontopski

Early on the morning of 17 June 1940, my company was ordered to blow up the railway tracks just north of La Charité. This was to prevent the trains coming from the north from getting to the railway station. I climb into the rear of my 20-mm gun truck and go to the north edge of the railroad yards. It was impossible to blow the tracks up here, because of the large number of side-tracks. We then started carefully along the track accompanied by a 20-mm self-propelled antiaircraft gun in charge of a lieutenant. The French often jumped from the train and fired on us with rifles. As soon as the antiaircraft gun and the 20-mm car arrived on the scene, their fire ceased. The caterpillar tread on the antiaircraft truck proved especially valuable. With them the truck climbed over the rails and the entire railroad grade. With this firing protection, I blew up the west tracks with a one-kilogram charge of explosive, about 350 yards north of La Charité.

After further firing we took a French captain prisoner. I told him that if all the soldiers did not surrender at once, I'd send for Stukas by radio, and have the train bombed and do the same if there were any evidence of sabotage. It was only because of the civilians (there were civilian trains between the troop trains), that we were so careful in our attack. Upon the captain's written order, the captives soon came marching over the railway embankment. An officer of our detachment had been fired upon on the railway grade, two miles south of Mesves. I took the scouting troop to this place with a 20-mm gun truck and a machine-gun truck. With the help of the 20-mm gun I got 80 more Frenchmen out of the cars and fields.

The north end of the row of trains was in this place. I blew up the tracks with a 3 kilogram charge back of the last locomotive without doing any harm to the locomotive. The train could go no farther! As we traveled farther toward Mesves, I ran into heavy fire from two machine guns. I

fired on them and stopped both. I then went back to La Charité. I had had learned that there were other trains in the yards at Mesves, also on the stretch of track on to the north. The line of trains reached from La Charité northward a distance of about 15½ miles. We took almost 1,200 prisoners from the trains from La Charité to Mesves.

In addition to the captured soldiers, there were also on the trains motor fuels, weapons, ammunition, wood, cotton, tanks, cannon, aircraft trappings, etc. Secret documents were also found.

A MOTORIZED SCOUTING TROOP. PURSUIT WARFARE IN CENTRAL FRANCE.

[Ein motorisierter Spähtrupp. Verfolgungskrieg im Mittelfrankreich.] Lance Corporal Bonhold

Our pioneer troop has the assignment of finding a suitable place for a bridge across the Allier south of Moulins. A sergeant major and two other noncommissioned officers are in command and a side-car motorcycle and a motorcycle messenger are also in our party.

We go far into hostile territory. We run across groups of fully armed soldiers, apparently French deserters, who put their rifles out of commission and travel on. We hope they will be captured. We are now some nine miles ahead of our most advanced comrades, at a point where the highway leads to a reinforced concrete bridge . . . and it is not yet blasted! The enemy must be very close. We quickly hide our vehicles, and make our way carefully to the bank of the stream. We hear the sound of work from over there. The French must be getting ready to blow up the bridge.

"Get onto the bridge!" cries the sergeant major. The French stare uncomprehendingly at us as we advance almost to the middle of the bridge.

One of our noncommissioned officers looks through the field glasses. "The whole mountain in front of us is occupied," he says. "They have dug in here to make a stand."

We deliberate feverishly. We have no chance in a firing combat for we are but targets for the soldiers up above, there in the even and completely open terrain. To be sure, our first gunner has set up his light machine gun threateningly on the parapet, but how long can he maintain his position? Perhaps we can delay the demolition of the bridge long enough for reinforcements to arrive. Our motorcycle messenger goes back to the company at full speed.

The French nearest us have taken up their rifles and are behind their sand bag protection. One of our men speaks French. He calls to them to send two men across to us. He tells them we have something to say to them. We plan to demand their surrender. We must bluff the enemy and gain time. The unexpected happened. Two Frenchmen come toward us, rifles in hand. The next instant they throw their weapons into the water. One of the men remains with us as a hostage, the other returns to report our request. We'll just have to keep the French busy with negotiations another quarter hour. Scattered French soldiers keep bobbing up continually behind us, highly astonished at seeing us here. We get one of them to call our request out again to the French on the other bank of the stream. The silence becomes ominous. The French on the other side have gone into their positions. Suddenly there is a shot, a signal shot, for now there is a rattling and cracking of guns from every side and the bullets scream around us fiendishly. We count several heavy machine guns and numerous riflemen. There is the cracking of a gun from the church tower and from behind the church yard wall. We are completely exposed on the highway and in the adjoining terrain. Now the roar of a mortar is also heard.

In spite of the fire, the most of us have reached the ditch beside the road and are withdrawing. Our No. 2 gunner and the interpreter have thrown themselves down along the highway. They work their way backwards inch by inch on their stomachs for a distance of at least 50 yards. Occasionally they played dead, to escape fire.

The interpreter finally reaches a log lying on the ground and replies to to the fire of the Frenchmen from this position. Suddenly the hostile fire ceases. Our No. 2 gunner uses this pause to reach cover too. Bullets immediately begin to rain onto the log, but the two men now have but a barbed wire fence to cross. When they crossed this they took shelter in a clump of bushes. Fate permits them to run onto two chance bicycles. Again the hostile machine gunners succeed in drawing a bead on them. Again they take a headlong dive from their bicycles onto the highway and are out of range. On returning they meet the disarmed Frenchmen. Threateningly, one of them raises his arm and attempts to stop them, but the interpreter cries out to him: "Avez-vous des armes?" [Have you any weapons?] The Frenchman immediately raises both his hands, trembling, above his head and cries: "Non, non, Monsieur!" [No, no, sir.] and calmly and undisturbed the two German soldiers pass by thirty gaping Frenchmen.

Our bridge was blown up by the French after all. Our comrades came too late, but by minutes only. However, it did not hold up our advance.

RUSSIA.

[Russland.] Lieut.Colonel Gaul

Unlike the military geography of most countries whose mountain ranges, rivers or peculiar centers of civilization provide a convenient means by which they can be subdivided into definite localities, no such method of subdivision is applicable to Russia. Consequently, any discussion of Russia must treat of the characteristics of the country as a whole.

In European Russia we may make the following differentiations: (1) Northern Russia with its treeless areas of the tundra. (2) Great Russia, the immense pine and fir forest region favorably situated in the center of the country, its immense monotonous stretches broken only by the birches, swamps, meadows and small areas of arable land. These forests served as a protective barrier against invasion by the steppe tribes to the south. They comprise the nucleus of Russian development as a nation. This region, as far as the Slavic frontier to the west, had been inhabited originally by a Finnish people, but, as a result of colonization, it became gradually Slavic. (3) The fertile area of black earth usually identified as the Ukraine. (4) The Urals, an area of individual character — a mountainous country rich in minerals. (5) The prairie-like steppes that border the Caspian Sea.

The enormous size of the country presented extraordinary difficulties which were responsible for retarding the development of the national organization. There was no direct communication between the West and the East that might have favored an organic development. In going from the North to the South, the transition from forest to steppe is irregular and without lines of demarkation; there is no definite boundary to form a natural national or population frontier. The separation from Central Europe is due entirely to racial and cultural differences. Toward Siberia the amount of population deteriorates to such an extent that some areas are almost completely uninhabited. The interior of the country is without boundaries; well-defined provinces do not exist.

The entire region which comprises the Union of Socialist Soviet Republics extends over the enormous area of 21,230,700 square kilometers and has a population of 165,700,000 people of 180 different nationalities. The census of 1926 listed 77,732,200 Russians and, in second place, 38,189,500 Ukranians.

The U.S.S.R. consists of 12 republics.

The Republic of the Soviet Union with its 140,000,000 people comprises 70 percent of the population. Its capital is Moscow. Including Asiatic Russia it covers an area of 92.8 percent of the country. The Ukrainian Republic with its 32,000,000 people covers but 2.1 percent. East of Lithuania, East Prussia and the Gouvernment General, in the area being utilized by Germany as the theater of war, there extends as far as the vicinity of Smolensk the White Russian Republic with Minsk as its capital. It covers an area of 0.6 percent of the country and has a population of 5,400,000. Its plains are covered with great swamps, occasional forests and isolated sandy areas, all of which offer the population little in the way of farming, lumbering and fishing. Due to the scarcity of dry roads and navigable waterways, this area is well-adapted to defense. The other republics have no bearing on present events and, due to their small population, they demand but little interest.

The great rivers of Russia — the Volga, Amur, Lena and Yenisey — flow generally in a north-south direction. Although attaining great width in some localities, they are sufficiently narrow in others to favor bridge-building. Except during flood seasons, there are numerous places where they may be forded easily. In connection with the development of the extensive canal system they are an important adjunct to the road and railway nets.

The roadnet is poorly developed. Only about 50,000 kilometers are suitable for modern traffic. A great highway construction program had been instituted but, due to the lack of technical knowledge, materials and machinery, there has been but little progress, except in the vicinity of Moscow, Nizhni Novgorod, the Ukraine and Eastern Siberia. Auto-highways connect Moscow, Minsk, Kiev and Nizhni Novgorod.

The efficiency of the Soviet railway system is handicapped by the large amount of single track. Its total length of 80,000 kilometers gives the country but 4 meters of track to every square kilometer, as against 110 meters to every square kilometer in Germany.

Under these conditions river traffic assumes an especial significance. More than three-fourths of all inland waterway shipping are routed via the Volga and its tributaries. As no railway follows the course of this river, all commercial traffic between the cities along the river for the greater part of the year makes use of the river. For about three months each year, during the ice blockade, all commercial traffic is handled by the railroads over circuitous routes.

The ports on the Black Sea provide for the export trade of the productive regions of Southern Russia. In the north, Leningrad serves as a traffic link between the inland waterways and the sea. Ocean commerce with Western Europe is cleared on the White Sea through Archangel, and on the Murman Coast through Murmansk. The latter is rarely affected by ice blockades.

Due to climatic and commercial reasons Russia's great northern coast line is practically worthless. Considering the great distance from the centers of population, use of the White Sea is limited. Neither does the Baltic offer any great advantage. Its coast line is small and rarely ice-free. Forest and swamp areas intervene, rendering control from without more advantageous than from Russia herself. Despite the fact that the coast on the Black Sea is favored by the climate and natural facilities, it offers no direct connection with the oceans beyond. Commerce beyond the shores of the Black Sea depends entirely on the Powers who control the Dardanelles.

Bordering on the Black Sea, the favored Ukraine extends from East Galicia to the Don. The "black earth" is very fertile and, due to the long summers and abundant rains, produces rich harvests. This region is the larder of the Soviet Union. Until about the close of the 18th century, the Ukraine was practically an uninhabited steppe. Sometime during the middle of the 18th century, however, the Russians learned from the German farmers that the Ukraine is adapted to forms of agriculture other than that of cattle grazing.

The industrial centers of Lugansk in the Donetz Basin and Tsaritsyn in the Caucasus form a sort of Soviet "Ruhr." Nearly half the coal mined is sent into the Donetz Basin, where more than half the iron and steel plants are concentrated. There is a definite shifting, however, toward the Urals. Still, the industrial center of Magnitogorsk in this locality depends largely on Donetz for its coal. Manganese ore has been located in the vicinity of Nikopol in the Ukraine and Tschiatury in the Caucasus. The Caucasus also contains the important oil wells of Baku and Grozny.

Despite the apparent industrial development, the Soviet Union remains principally an agricultural country. Only 17 percent of the population live in communities of more than 5,000 inhabitants. In some provinces only

3 percent of the population live in cities. The great mass of the people dwell upon the plains and depend for their sustenance entirely upon what they can make the soil produce.

22 August 1941

ACROSS THE MEURTHE TO THE SEUTH. COMBAT REPORT OF THE ANTITANK COMPANY, 305TH INFANTRY, 20 JUNE 1940.
[Uber die Meurthe nach Süden! Kampfbericht der Panzerjäger-Kompanie I.R. 305 vom 20. 6. 1940.] Lieutenant Vögele

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THE SOVIET RUSSIAN ARMY.
[Das sowjetrussische Heer.] Lieut.Colonel Gaul

Immediately following the outbreak of the German-Russian War, the German high command published information pertinent to the regularity with which the Russians had increased their troop dispositions along the frontier since the beginning of 1940. A study of these dispositions indicates that on May 1, 1941, Russia had mobilized on her western border: 118 infantry divisions, 20 cavalry divisions and 40 motorized and armored brigades; in all, about 158 divisions. The total strength of the Soviet Russian Army, according to this same report, is given as comprising 170 infantry infantry divisions, 33½ cavalry divisions and 46 motorized and armored brigades; forces which represent from four to five million men. Even though we accept the figures of the press as ten to twelve million, this possibility must be considered when we take into account that the arms, equipment and the command and staff necessary for such a mass are inadequate.

The Red Army consists of two components — the Regular Army and the Militia. Consequently, the Soviet Russian Army is composed of elements which represent an assortment characterized by various degrees of training. Recent reforms have not had sufficient time to become effective. Troops of the Regular Army are referred to as "cadre units," those of the Militia as "territorials." The cadre units are maintained by an annual enlistment of recruits, who are required to serve for two years. The territorials are given a very short period of training during the summer. In 1935, the ratio of cadre units to territorials was inverted from one to three to a ratio of three to one, respectively.

Prior to enlistment, a period of compulsory preliminary training is effected through the cooperation of the great people's defense organization, known as "Ossoaviakhim," with the "Communist Youth Organization" and the Army. All between the ages of 19 and 41 are subject to call to active duty for a period of from two to three years, depending on the branch of service.

The Russian peacetime army may be considered as having consisted of approximately 300 infantry regiments or 819 battalions, 128 cavalry regiments or 737 troops, 28 armored regiments, 140 light artillery regiments, 35 regiments of heavy corps artillery and 20 artillery regiments in GHQ reserve. To these we may add 100 or more battalions of engineers, 9 bridge-building battalions, 32 separate troops of engineers, 25 railway regiments, 12 signal regiments, and other specialized units consisting of 119 separate battalions, 300 companies and 75 troops, and some separate gas defense battalions and companies.

Even in peacetime, about one-third of the army was garrisoned in the military districts which bordered the western frontier. The fact that in June 1941 these districts contained more than a third of the entire number of divisions and nine-tenths of the total number of air-landing fields, indicates that Russia was mobilizing for war against Germany.

Assuming that the wartime army consists of a force that has resulted from doubling the peacetime army, we may infer that the principal arm is represented by 200 to 210 infantry divisions. If we add to these great organizations, comprising the army of cadre units, a territorial army of similar strength but militia-like in character, we may arrive at a theoretical wartime estimate of 10,000,000 men, a figure which the Russia Army statisticans believe to be possible.

Of greater importance than the numerical estimate is the supply of arms, equipment and leaders. Consider the effects of the blood purge of 1937. In 1936, following his visit to France as the representative of the war commissar, Marshal Tukhachevski was to have attended the coronation ceremonies in London as the envoy of the Soviets. Instead, he landed in the Lubianka Prison, where he was shot in the neck. About the same time a large number of army commanders, corps commanders and commanders of military districts were disposed of. The Chief of the Air Force and his assistant, the Chief of the Armored Force and the leader of the "Ossoaviakhim" in White Russia were all liquidated, a disposition which was followed by the murder of about a half-dozen admirals. The victims of the purge were not limited only to officers of high rank. According to careful estimates the officers on active duty during the period 1937-1938 suffered a loss of 20,000 dead or imprisoned, or 25 percent of their strength.

It had been hoped that the infiltration of the political commissars among the units which comprised the army, the air force and the fleet would restore battle efficiency. Voroshilov referred to them as "the soul of Bolshevistic military virtue . . . that miraculous cement" that should secure the "militant solidarity of the party." A series of adversities suffered in the Russo-Finnish War, due in part to command interference by the political commissars, resulted in initiating the elimination of the political elements from troop leadership. During the middle of July, however, impressed by the military failures of the present war, the political commissars were being reinstated and invested with increased authority.

The air and armored forces, fondly referred to as elite arms, are considered to be better disciplined than the other branches. The Russians have great confidence in their armored units, estimated as having from 12,000 to 15,000 tanks. About half are either obsolete or vulnerable to the fire of German antitank weapons. Supporting tanks with a large number of cavalry divisions appeared to have a definite justification when the peculiar character of the theater of operations was taken into account. This assumption has no more justification than had the employment of mounted units in the Polish campaign.

The Air Force has about 12,000 planes, of which but one-third may be considered first class, and an aggressive and technically superior opponent possibly could destroy them within a comparatively short period of time.

As a result of extensive propaganda and the infusion of the military system with the youth organizations, there is an abundant supply of officer replacements. The selection and training of cadets are the function of the numerous military and service schools. The ages prescribed for entrance are from 18 to 23 years. The curriculum covers a period of from 3½ to 4½ years and terminates with the award of a commission. The military school system is extensively developed. The 12 schools for the training of officers of advanced rank have extensive training schedules, which adhere largely to fixed doctrine.

In final analysis, it will be the continually phlegmatic character of the Russian people that will decide the capabilities of the army and its officers. Their principles of leadership are based on those of the mass armies of Europe. Their objective will continue to be the complete annihilation of the hostile force, accomplished by means of the attack, concentrating on the main effort, organizing all available means of combat for the penetration and, if at all possible, effecting an envelopment. In actual practice, however, Soviet Russian leadership will always be subject to the unfavorable influence of its lack of a sense of responsibility, its adherence to fixed doctrines, and the typical bungling of the Russian.

The strength of the Soviet Russian Army lies in its abundant mass of available manpower. We may be assured that, when driven to the wall, the Soviet Russian will put up a stubborn fight and, when supported by strategically located fortifications, he will give a good account of himself.

29 August 1941

A RECONNAISSANCE MISSION INTO THE HOSTILE DEFENSIVE POSITION.
[Deutsches Soldatentum. Ein Erkundungsauftrag in eine aufgerollte Verteidigungsstellung des Gegners.] Sergeant Müller

On the afternoon of 7 July 1941, the division was ordered to cross the Dvina at B. and to mop up the woods in the great bend of the river in this vicinity. All that was known of the enemy on the other side was that he held the north bank of the river.

Fighting had been difficult. The enemy defended stubbornly but even this resistance was broken.

On the morning of 10 July I was given the mission to find out what Russian troops were engaged in battle, how many prisoners had been brought in, what the enemy's losses were and what weapons we had either captured or destroyed.

I started out in a motorcycle side-car, accompanied by an interpreter. We travelled alongside endless motor columns and finally reached the Dvina. The river was crossed on a ponton bridge built by our pioneers under heavy artillery fire and soon we arrived in the developed defensive zone of the enemy. We at once sensed that the enemy had sustained heavy and bloody losses in this sector.

At first we took no prisoners. I was therefore forced to look over the dead to find what I was after. They were all without papers or identification marks. The enemy had used this careless method of concealment even in Poland and in the western campaign. Finally we took some prisoners and obtained our information.

Reconnaissance in the place where the breakthrough had occurred revealed that our opponent had lost about 500 men and that, in addition, about 130 prisoners were taken here. Questioned prisoners stated that they had arrived at these positions but a few days before, after having been taken into the army about the end of May. They had been brought here from the Urals and their transportation by rail had been interrupted by German bombers. Their supply lines had also been cut by the bombers and for two days they had nothing to eat and, after that, only hard bread. Their officers and commissars had told them that when captured by the Germans their ears and noses would be cut off. Not in the least will their resistance be traceable to fear of such treatment.

The remainder of the unit which had been engaged here is completely broken up. They have left behind all equipment, from cartridge pouches to weapons, and fled.

A few antitank guns and mortars, several heavy machine guns and ammunition stores, the entire new equipment for a machine-gun company, and 70 horses were taken.

5 September 1941

THE PERSIAN GULF.
[Der Persische Meerbusen.] Dr. Otto Constantini

England's best means of communication between the Mediterranean Sea and her possessions in southern Asia have been interrupted by unfavorable operations in the northern portion of the Red Sea. She still has access, however, to the Persian Gulf, a route almost as good as the former. The Persian Gulf is contiguous to the Indian Ocean. It covers an area equal approximately to that of Scotland and England. It contains numerous sand bars. Its depth averages 25 yards, but never exceeds 100. The delta formed by the confluence of the Euphrates and the Tigris has an annual overflow of from 40 to 50 yards. During the month of August the temperature of the Gulf water has registered as high as 35 degrees Centigrade.

Persia, which borders the eastern shore, is mountainous and more or less inaccessible. The western shore, however, is flat and indented with many bays. Traffic deep into the hinterland, facilitated by the Euphrates and the Tigris, presents little difficulty and favors the course of commerce from the Mediterranean via Bagdad to India and China.

During the nineteenth century, the rich oil discoveries in Mesopotamia and the Iranian mountains induced England to consider the acquisition of the Gulf and certain strips of land contiguous thereto, thus securing her

communications with India by both land and sea. At the beginning of the twentieth century, southern Persia came under English influence. After the conclusion of the World War, England was in a position to make the Persian Gulf exclusively a British sea. From Irak to the Gulf she kept sharp watch over all commerce and traffic and, a short time later, brought under her control the surrounding newly created states of Saudi Arabia and Oman. The Bahrein Islands in the Persian Gulf developed into important naval and air bases.

Recently Indian and Australian supply units were transported from North China via the Persian Gulf and the Port of Basra to the theater of operations in Africa. The sea route from Bombay via the Persian Gulf is but half the distance of that via the Red Sea. Without the rich supply of fuel the 870-mile route from Basra to the Mediterranean could not be covered without encountering great difficulties. With the attack against Iran the Persian Gulf again moves well into the foreground.

FREQUENT MISTAKES OF UMPIRES.
[Ausbildung im Schiedsrichterdienst.] Major von Petersdorff

(1) Unfamiliar with the situation and progress of the exercise.
(2) Permitting inactivity following faulty development of the exercise (lack of initiative in assigning fire missions, etc., or failure to report to higher umpires or controllers).
(3) Announcing, "Don't advance beyond this line."
(4) Giving advice as to the intended progress of the exercise.
(5) Insufficient time allotted to permit the proper development of the exercise.
(6) Insufficient assessing of casualties in both defense and attack.
(7) Permitting a long fire fight without accrediting fire superiority to either side.
(8) Giving information on enemy fire only to the leader without regard to the troops.
(9) Giving away the position through conspicuous exposure.
(10) Failure of a mounted umpire to inform the enemy umpire of the delivery of fire when troops on the latter's side ignore it.
(11) General announcement: "This area covered by artillery fire" instead of giving more pertinent information on duration of fire, direction, caliber, etc.
(12) Failure to report independent actions and personal interpretations to higher umpires.
(13) "Machine-gun fire has ceased" — as though the enemy could fire interruptedly. It should be: "The enemy has lost fire superiority," or "He will fire only on troops who continue to move."
(14) Announcing, "The enemy is falling back" instead of "Number one rifleman, from the enemy's position you can see a man running to the rear."
(15) Announcing "Gas" instead of "You can smell mustard."
(16) Permitting an attack to succeed without supporting fires, rushes or individual preparations, before the enemy withdraws or is assessed heavy casualties.
(17) Failure of mounted umpire to familiarize other umpires with the situation.
(18) Failure to listen in when the platoon leader gives his orders.
(19) Failure to keep the troops under constant observation.
(20) Permitting one of the opposing forces to lie in groups in the open without attempting to intrench or being assessed casualties.
(21) Announcing, "Take cover," or "Return fire," instead of "Bullets are whining past your ears."
(22) Giving information of the terrain or from maps, when such information is either unknown to the troops or the use of maps forbidden to them.
(23) Failure to respect designated boundaries.
(24) Failure to observe safety measures.
(25) Failure to have targets exposed.
(26) Failure to check the field of fire.
(27) Injecting restraining factors during a vigorous advance of the attack.
(28) Permitting troops to lie about idly without imposing "artillery fire" as a substitute for intrenching.

12 September 1941

ENCIRCLEMENT.
[Die Einkesselung.] General Ludwig

This article reviews the historic situations of World War I in Lorraine and in the Battle of Mons-Namur and near St. Quentin, where the German high command did not take advantage of strategic encirclement operations. At Tannenberg, it is emphasized, encirclement permitted the initiative to pass to the Germans. With regard to the employment of encirclement operations in the present war with Russia the author makes the following observations: "Reconnaissance is much easier with our present efficient Luftwaffe, which, if necessary, also carries supplies to elements which have been isolated; its radio equipment enables it to cooperate with them for the same purpose. That which possibly seems to a spectator to be confused interpenetration of units, is to the unit which executes it, part of a rational plan which will result in destroying the enemy while the latter's units are confused and without leadership. The German assaults were made mainly along highways on a terrain without paths or roads. The Soviets evidently believed that operations of this kind, now often called the 'assault wedge strategy,' could be effectively resisted by ordering troops held in readiness on the flanks to advance against the rearward communications of the isolated motorized units, and then having them surround the latter. In many cases it was possible to interrupt the line of march, but the infantry divisions, which were marching with amazing speed, reopened the roads, the sole result being that the Soviet troops thus created the necessary conditions for their own encirclement. The motorized units whose column had been penetrated, however, not only prevented the escape of the Soviet troops toward the east, but also frustrated attempts to relieve them with fresh troops. This increased the dimensions of the defeat.

THE FIRST DAY OF BATTLE IN THE WEST ACROSS THE MEUSE AT ROERMOND ON 10 MAY 1940. A YOUNG PIONEER EXPERIENCES BAPTISMAL FIRE.
[Der erste Kampfstag im Westen bei Roermond über die Maas am 10. 5. 1940. Ein junger Pionier erlebt an der Maas seine Feuertaufe.] Pionier Fabi, 2d Company, 19th Pioneers

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THE U-BOAT COMMANDER AND HIS WEAPON.
[Der Führer der Uboote und seine Waffe.] Captain Waldeyer-Hartz

19 September 1941

A TROOP LEADER OF A COMMUNICATIONS DETACHMENT TELLS HOW . . .
[Ein Truppenführer der Nachrichten-Abteilung erzählt . . .]

This narrative describes at length the experience a German corporal had in Holland on 10 May 1940, when as part of a communications detachment he was ordered to go from Roermond to Heel, where he was to connect the division's observer by telephone with the division headquarters at Roermond. The observer was supposed to have been in the church tower at Heel, but the German drive had by-passed Heel and the observer was not there. Unable to find the observer, the corporal and his companion are suddenly confronted with Dutch soldiers, whom they boldly warn that there is no use to resist, that the Germans have already penetrated far beyond Heel. Dissension among the Dutch officers and an acceptance of his warning, the corporal relates, enabled him to persuade them to lay down their arms and to consent to being marched back to Roermond, from whence they had fled, as prisoners.

26 September 1941

COMMANDER AND COMMANDANT.
[Kommandeur — Kommandant.] Lieut.Colonel P. Buhle

This article makes a fetish of personality, especially as embodied in past and present military leaders of the German reich. Personalities of the old royal Prussia, imperial Germany and the personalities of the present national socialistic Germany, the author contends, are giving his nation her present strength. Significant in the article is the statement that "the instrument which is to bring order into the world is the establishment of military power and the dissemination of a military spirit, upon which ideal Adolph Hitler founded his third reich and will complete the labor of putting Europe on a sound basis."

DANISH VOLUNTEERS JOIN GERMANY VERSUS SOVIET RUSSIA.
[Dänische Freiwilligenkorps zusammen mit Deutschland gegen Sowjet-Russland.]

This article is replete with individual testimonials of men who have volunteered in the "Nordland" regiment to join Germany in her war with Russia. Reasons given by the volunteers are for the most part an expression of gratitude for expressions of hospitality they have at one time received while sojourning in Germany or because they believe that Russian bolshevism has no place in Denmark and they fear it, should Germany be unsuccessful in her war with Russia.

3 October 1941

WHEN WILL THE WAR BE WON?
[Wann fällt die Kriegsentscheidung?] General Ludwig

TYPES OF RUSSIAN PLANES.
[Flugzeugmuster der sowjetrussischen Luftwaffe.]

TURKEY.
[Türkei.]

FINANCING A WAR BY ECONOMIZING.
[Kriegsfinanzierung durch Sparen.] Dr. Walter Flemmig

10 October 1941

IN A TANK, HEADED FOR PERWEZ.
[Im Panzer in Richtung Perwez.] Lieutenant Winter

PREPARATION OF FOOD IN THE FIELD.
[Die Zubereitung der Feldkost.] By Pieszczek, of the General Staff

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SWISS VIEW OF THE COLLAPSE OF FRANCE.
[Schweizer Ansichten über den Zusammenbruch Frankreichs.] Colonel von Xylander

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THE STRUGGLES FOR FREEDOM ON THE NORTHWEST BORDERS OF INDIA.
[Die Freiheitskämpfe an der Nordwestgrenze Indiens.] Professor Ernst Schultze

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GIBRALTAR. Captain von Waldeyer-Hartz

THE RUSSIAN MERCHANT MARINE AND ITS TRADE ROUTES.
[Sowjetrusslands Handelsschiffahrt und ihre Wege.] Dr. Paul Ruprecht

Russia's merchant marine development since 1932 is succinctly told in this article. The author explains that the merchant marine is entirely state-owned, that private ownership of a boat with a capacity of more than

15 tons or with an engine of more than 15 horsepower is forbidden. Three large canal systems are under development in Russia, only one of which, started under the czars, is now open for commerce: the Volga-Moscow canal. A second extends from Stalingrad on the Volga through the Sea of Azov and connects with the Black Sea. The third system will join Moscow with the White Sea via Lake Onega. The article also describes the development of Arctic Ocean commerce, the change from steam to oil driven ships, the simultaneous development of air service along water routes, etc.

FROM THE TROOPS — FOR THE TROOPS. FORM OF INSTRUCTION TO EMPLOY IN THE TRAINING OF SOLDIERS, ESPECIALLY AS TO THE DUTIES OF THE GERMAN SOLDIER.
[Aus der Truppe — für die Truppe. Die Gestaltung des Unterrichts über soldatische Erziehungsfragen, insbesondere über die Pflichten des deutschen Soldaten.] Major Nachreiner

In this article the author describes a training method used in companies and platoons, wherein a manual is followed and the question and answer period follows the lecture. General Altrichter's book, "Das Wesen der soldatischen Erziehung" [The Manner of Military Training] is recommended by him as the best illustration of the form to follow in instruction. This book, now in manual form, teaches the "Duties of the German Soldier." The latter and a series of lectures on the importance of instruction, the tasks of national defense, the honor of the soldier, courage and bravery, obedience, comradeship, and loyalty and the performance of duty are given those who are to train the companies and platoons. Officers and noncommissioned officers on semi-retired basis for the most part are training recruits of the draftee army effectively in this lecture and question-answer method.

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DIE PANZERTRUPPE (Germany)

July 1941

WAR EXPERIENCES AMONG "FAST TROOPS."
[Kriegserlebnisse bei den schnellen Truppen.]

Under this caption appear four recitations of personal experiences. One, by a first lieutenant, relates how a bridgehead was formed and the passage over the Rhine-Marne canal was assured for his division and Contrisson captured on 14 June 1940. In another, a noncommissioned officer tells how he with other pioneers, in an armored car, captured a French tank at night, the author having let the tank pass and then climbed upon it and pointed his pistol into an open slit, effecting surrender. In the third, an infantry detachment is momentarily halted and pleads for assistance from passing antitank troops, which oblige with an antitank gun and readily breaks the hostile resistance and permit the infantry to advance. A sergeant major describes how heavy artillery on 20 May 1940, in an armored division's advance on Abbeville, encountered a detachment of British motorized troops. After permitting them to pass, within range, they later overtook them and at pistol's range effected a capture of the British detachment.

THE FATE OF THE INVENTOR OF THE CATERPILLAR TREAD.
[Vom Schicksal des Raupenwagen-Erfinders.]

The author describes how Captain Julius Schneider, of the engineers, German army, first took interest in the development of an endless tread for the wheels of vehicles of 1880, by recommending that such be built. The article traces the development of the caterpillar tread through the decades, recognizing the British development, but particularly from the point of view of interest of prominent German military leaders in mechanizing instruments of war.

August 1941

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[Normung und Vereinheitlichung im Kraftfahrzeugbau.]

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[Réflexions sur la campagne de France (Doctrines et Matériels).] Captain Ed. Bauer

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[Commentaires sur la guerre actuelle.] (I)

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[La question de la neutralisation du canal de Suez et du canal de Panama.] By A.B.

COMMENTS ON THE PRESENT WAR. GUERRILLA WARFARE.
[Commentaires sur la guerre actuelle (La guérilla).

ROYAL AIR FORCE QUARTERLY (Great Britain)

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ROYAL ENGINEERS JOURNAL (Great Britain)

September 1941

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THE OIL SITUATION IN THE MIDDLE EAST. By "Oilfield Engineer"
BARRIER TACTICS. Major L.E. Seeman, Corps of Engineers, U.S. Army
THE TRAINING OF THE JUNIOR N.C.O. Lieutenant P. Drake-Wilkes
RAILWAYS AND HARBOURS IN TROPICAL AFRICA. A BRIEF RECORD OF THE WORK OF THE ROYAL ENGINEERS IN RECENT YEARS

VETERINARY BULLETIN

[Supplement to the Army Medical Bulletin]

October 1941

SUMMARY OF 1941 FOALING RECORDS AT FRONT ROYAL. Captain William E. Jennings
NOTES ON PROCESSING, CANNING AND INSPECTION OF TUNA FISH. Lieutenant Ralph O. Anslow, Vet Corps-Res.
AVERAGE PRICES PAID FOR HORSES AND MULES, FISCAL YEAR 1941. (W.D. Circular No. 182)
EQUINE ABORTION AND DISEASES OF FOALS

WISSEN UND WEHR (Germany)

July 1941

THE TAKING OF THE BRIDGEHEAD FORTRESS OF TUTRAKAN IN 1916, AND THE PRESENT BULGARIAN ARMY.
[Die Einnahme der Brückenkopffestung Tutrakan im Jahre 1916 und die bulgarische Wehrmacht von heute.] Colonel Ivan Popoff

This article is an extract of an address given by Colonel Ivan Popoff, of the Bulgarian Army General Staff at the invitation of the German Society for Political and Military Science on 21 March 1941. It recounts the period immediately following 27 August 1916 when Rumania declared war upon Austro-Hungary and the events leading up to the capture of the bridgehead at fortified Tutrakan. Says the author, "at Tutrakan there was particularly to be observed the advantage to be had in attack as compared with defense." To his own question, "wherein lies the cause for today's German successes?" the author responds "manifestly in the superior preparation of the German army, in its excellent leadership, in improved technical means, but above all in the high moral preparation of the German people and the German defense force, in which all — from high commander to the last soldier — think in accord and are prepared to die and to conquer!"

In conclusion the author recites how the Bulgarian army has regained its strength since World War I and is ready for action "for continued triumph of justice and for the realization of the announced new order for Europe."

THE EASTERN MEDITERRANEAN AS A BONE OF CONTENTION.
[Das Ostmittelmeer als geopolitischer Kampfraum.] Dr. Johannes Wütschke

The author sets forth in this article by historically based facts that Great Britain has recognized the necessity for her control of the Mediterranean practically since construction of the Suez Canal was undertaken in 1859. Various international relationships which have been effective from time to time, in connection with Mediterranean affairs, are brought out. He concludes, however, that the "Mediterranean will and must become a free passage of the nations."

August 1941

GERMANY'S FIRST WAR FOR FREEDOM.
[Vom ersten deutschen Befreiungskampf.] (I) General Kühne, Retired

This is the opening installment of an article portraying various early wars fought by the German peoples for freedom. The first battle mentioned is the one which took place in the Westphalian forests in the year 9 A.D. and in which a force of some 24,000 men was defeated under Varus, Roman commander.

HOW IS THE (PRESENT) WAR BEING FINANCED?
[Wie wird der Krieg finanziert?] Dr. Ernst Nölting

TRANSPORTATION PROBLEMS OF THE BRITISH EMPIRE.
[Verkehrsprobleme des britischen Weltreiches.] Ernst Samhaber

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IS AMERICA AHEAD OF US IN THE MANUFACTURE OF MACHINE TOOLS?
[Ist die amerikanische Werkzeugmaschinenindustrie überlegen?] Dr. Christian Hildebrand

The writer contends that American industry is not nearly so favorably situated as is Germany's in having its plants adaptable and foresightedly constructed to convert them quickly to defense production. Germany's lead, particularly due to her experience in the tool industry, is such that the United States can not possibly catch up, he declares. Besides, he maintains, German industry has a fully-empowered industrial leader in its tool industry, a principle unknown in American industry and one into which it will need to grow.

September 1941

GERMANY'S FIRST WAR FOR FREEDOM.
[Vom ersten deutschen Befreiungskampf.] (II) General Kühne

HOW THE ENGLISH HELPED THE RUSSIANS IN THE STRUGGLE AGAINST BOLSHEVISM FROM 1918 TO 1920.
[Wie die Engländer den Russen beim Kampf gegen die Bolschewisten in den Jahren 1918 bis 1920 halfen.]

BRITISH COASTAL WATERS AS GERMAN BLOCKADE ZONE.
[Das britische Küstenvorfeld als deutsche Blockadezone.] Dr. H.H. Ambrosius

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EUROPE FROM DIFFERENT POINT OF VIEW: DEFENSE AGAINST BRITISH-BOLSHEVIST CLENCHING OF EUROPE.
[Europa anders gesehen. Zum Abwehrkampf gegen die britisch-bolschewistische Umklammerung Europas.]

THE EIGHTEENTH-CENTURY SONG OF THE GERMAN SOLDIER.
[Das deutsche Soldatenlied im 18. Jahrhundert.] Rudolf Haesen

ZEEMACHT (The Netherlands)

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SELECTION OF ARMY AVIATORS.
[Selectie van militaire vliegers.] Dr. A.E. Schuringa

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THE COMING VICTORY. ADDRESS BY H.M. QUEEN WILHELMINA.
[De komende overwinning, redevoering van H.M. de Koningin.]

THE PROPHET OF THE BLITZKRIEG.
[De profeet van den Blitzkrieg.] Albert Robida

October 1941

AMERICA'S FREEDOM OF THE SEAS.
[Amerika's Freedom of the Seas.] A.C.M. de Neeve

TORPEDO PLANES.
[Torpedovliegtuigen.] A.N. Baron de Vos van Steenwijk

General

AMERICAN JOURNAL OF SOCIOLOGY

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(National Morale Number)

PSYCHIATRIC ASPECTS OF MORALE. Harry Stack Sullivan, M.D.
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MILITARY MORALE. Brigadier General James A. Ulio
MORALE AND CIVILIAN DEFENSE. James M. Landis
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RADIO AND NATIONAL MORALE. James Rowland Angell
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MORALE AND ITS MEASUREMENT. Henry Durant
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MORALE IN CONTEMPORARY ENGLAND. Eric Estorick
A NOTE ON GOVERNMENTAL RESEARCH ON ATTITUDES AND MORALE. Edward A. Shils

FORTUNE

October 1941

A TOOL FOR MR. CHURCHILL: THE HEAVY BOMBER.

With a program for 500 a month, backed by a three billion dollar outlay and an unrivaled technical know-how, we are readying a breakthrough weapon that Hitler forgot.

BLUEPRINTS FOR DESTRUCTION

THE BOMBER AND BILLY MITCHELL

December 1941

HOW GOOD IS THE ARMY?

ORDNANCE

The Europeans have a headlong start on us in the prime tools of war.

BREAKTHROUGH!

Two 1941 armies in one day's action on the classic terrain of Gettysburg.

THE AMERICAN SOLDIER.

Given first-rate weapons and training, there is nothing wrong with his morale.

PREPACKAGED WAR.

Even war comes in a carton, so Container Corporation will make more boxes this year than ever before.

EUROPE: WE MISSED THE POINT

EUROPE: HOW IT RESISTS

EUROPE: HOW GERMANY RULES IT

THE ENGINEERS' WAR. By Alex Taub

Eight urgent mechanical projects in nine tablecloth drawings by a noted engineer.

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DAKAR AND THE OTHER CAPE VERDE SETTLEMENTS. Derwent Whittlesey

HARPERS MAGAZINE

December 1941

NO SEPARATE AIR FORCE. Hoffman Nickerson
DAKAR, KEY TO AFRICA. WHY IT IS IMPORTANT TO AMERICA. Eugene Wright

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3 November 1941

THE U.S. ARMY IN ICELAND. CRACK FIELD FORCE TAKES OVER AMERICA'S EASTERNMOST OUTPOST OF DEFENSE
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A WEST POINT EDUCATION. MATHEMATICS AND SCIENCE DISCIPLINE SOLDIERLY MINDS

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PARACHUTIST DIVES RECORD 29,300 FEET IN FREE FALL FROM SUB-STRATOSPHERE
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CUSTER'S LAST STAND. "THEY DIED WITH THEIR BOOTS ON" GLORIFIES A RASH GENERAL
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NATIONAL GEOGRAPHIC MAGAZINE

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CANADA'S WAR EFFORT. A Canadian pictures the swift and sweeping transformation from a peaceful dominion to a nation geared for war. Bruce Hutchison
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ANCIENT TEMPLES AND MODERN GUNS IN THAILAND
LIFE GROWS GRIM IN SINGAPORE. H. Gordon Minnigerode
BRITAIN'S OUTPOST OF EMPIRE. J. Baylor Roberts

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September 1941
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THE STRATEGY OF THE WAR. VIII
ARAB NATIONALISM AND THE WAR
CANADA

U.S. AIR SERVICES

September 1941

HISTORY'S DEADLY PARALLELS MULTIPLY IN RUSSIA. An editorial
30,000 OFFICER PILOTS A YEAR FOR UNCLE SAM. Major Frank L. Nelson

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The natural principle of war is to do the most harm to our enemy with the least harm to ourselves; and this of course, is to be effected by stratagem.—Washington Irving.

Wars, therefore, are to be undertaken for this end, that we may live in peace, without being injured; but when we obtain the victory, we must preserve those enemies who behaved without cruelty or inhumanity during the war.—Cicero.

Subject Index

LIST OF PERIODICALS INDEXED AND KEY TO ABBREVIATIONS

Aero = Aeroplane (Great Britain)
A Ord = Army Ordnance
A Quar = Army Quarterly (Great Britain)
Cav Jour = Cavalry Journal
Cav Jour [GB] = Cavalry Journal (Great Britain)
Chem War Bul = Chemical Warfare Bulletin
CA Jour = Coast Artillery Journal
Defensa = Defensa (Mexico)
Ejercito = Ejercito (Spain)
FA Jour = Field Artillery Journal
Ftg Forc = Fighting Forces (Great Britain)
Inf Jour = Infantry Journal
Jour RAMC = Journal of the Royal Army Medical Corps (Great Britain)
Jour R Art = Journal of the Royal Artillery (Great Britain)
Jour RUSI = Journal of the Royal United Service Institution (Great Britain)
MC Gaz = Marine Corps Gazette
Mil Mitt = Militärwissenschaftliche Mitteilungen (Austria)
Mil Rund = Militärwissenschaftliche Rundschau (Germany)
Mil-Woch = Militär-Wochenblatt (Germany)
Mil Af = Military Affairs (Jour. American Military Institute)
Mil Eng = Military Engineer
Mil Surg = Military Surgeon
Nav Inst Proc = Naval Institute Proceedings
Ord Ser = Ordnance Sergeant
Our Army = Our Army
Panzer = Die Panzertruppe (Germany)
QM Rev = Quartermaster Review
Rec News = Recruiting News
Res Off = Reserve Officer
Rv Mil Suisse = Revue Militaire Suisse (Switzerland)
RAF Quar = Royal Air Force Quarterly (Great Britain)
Roy Eng Jour = Royal Engineers Journal (Great Britain)
Vet Bul = Veterinary Bulletin
Ws & Wr = Wissen und Wehr (Germany)
Zeemacht = Zeemacht (The Netherlands)

GENERAL

A Jour Soc = American Journal of Sociology
Fortune = Fortune
Geog Rev = Geographical Review
Harpers = Harpers Magazine
Life = Life
Nat Geog = National Geographic Magazine
Round Table = Round Table (Great Britain)
U. S. Air Services = U. S. Air Services

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Characteristics and organization of the motorized division. [See page 36]
A few reflections on the armored branch. [See page 39]
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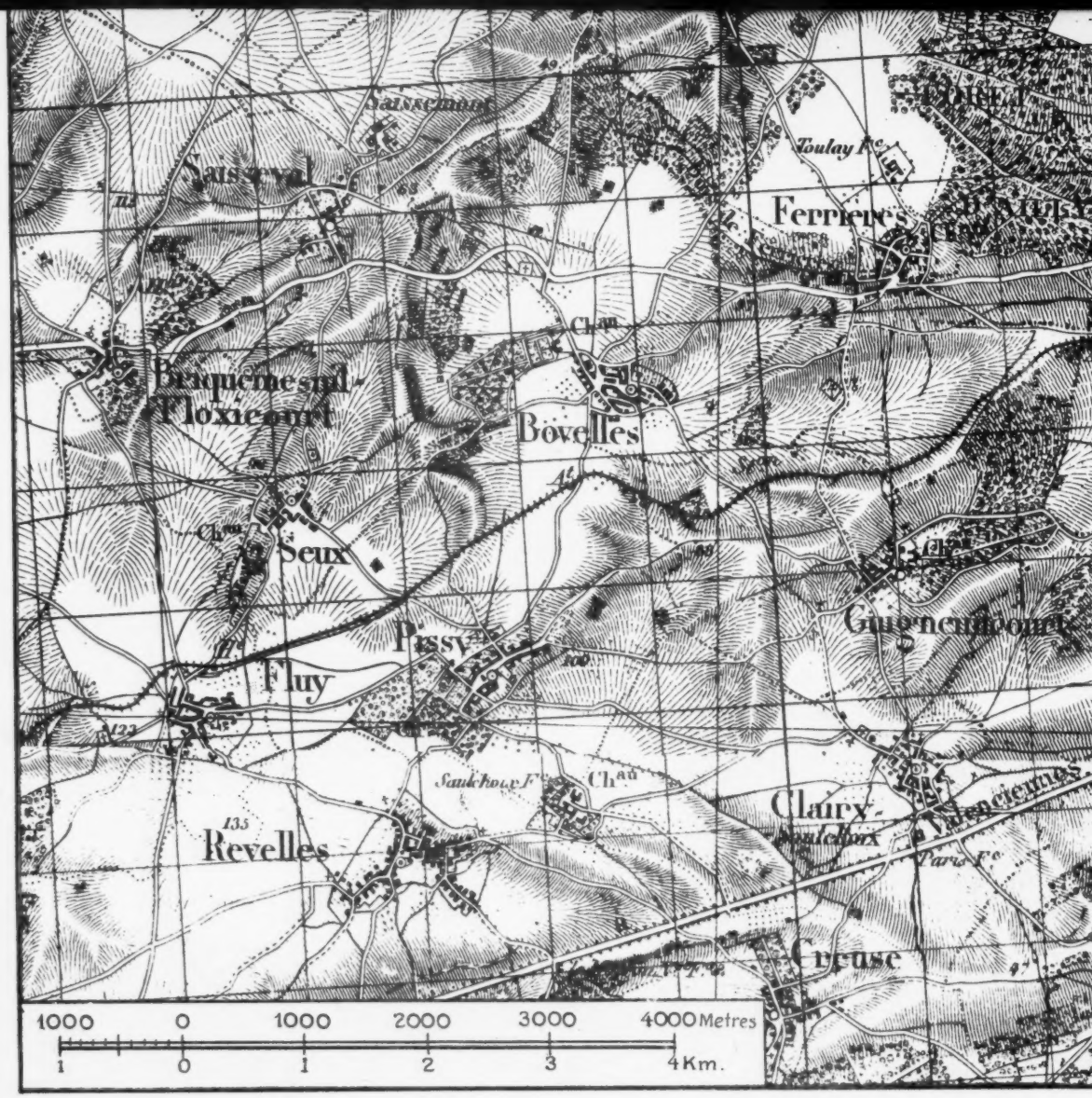
The whole art of war consists in getting at what is on the other side of the hill, or, in other words, in learning what we do not know from what we do.—Duke of Wellington.

Ellecourt
Zeux
Belloy-sur-Somme
la Chaussée-Tirancourt
Tirancourt
St Pierre
CT
Pont-Remy
Breilly
Fourdrinoy
Daussemont
Daussy-val
Toulay

Vignacourt
Flesselles
Fremont
St Vast en Chaussée
Poulainville
St Sauveur
Argœuves
Dreuil
Thoiry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Ferrières
Bouchon
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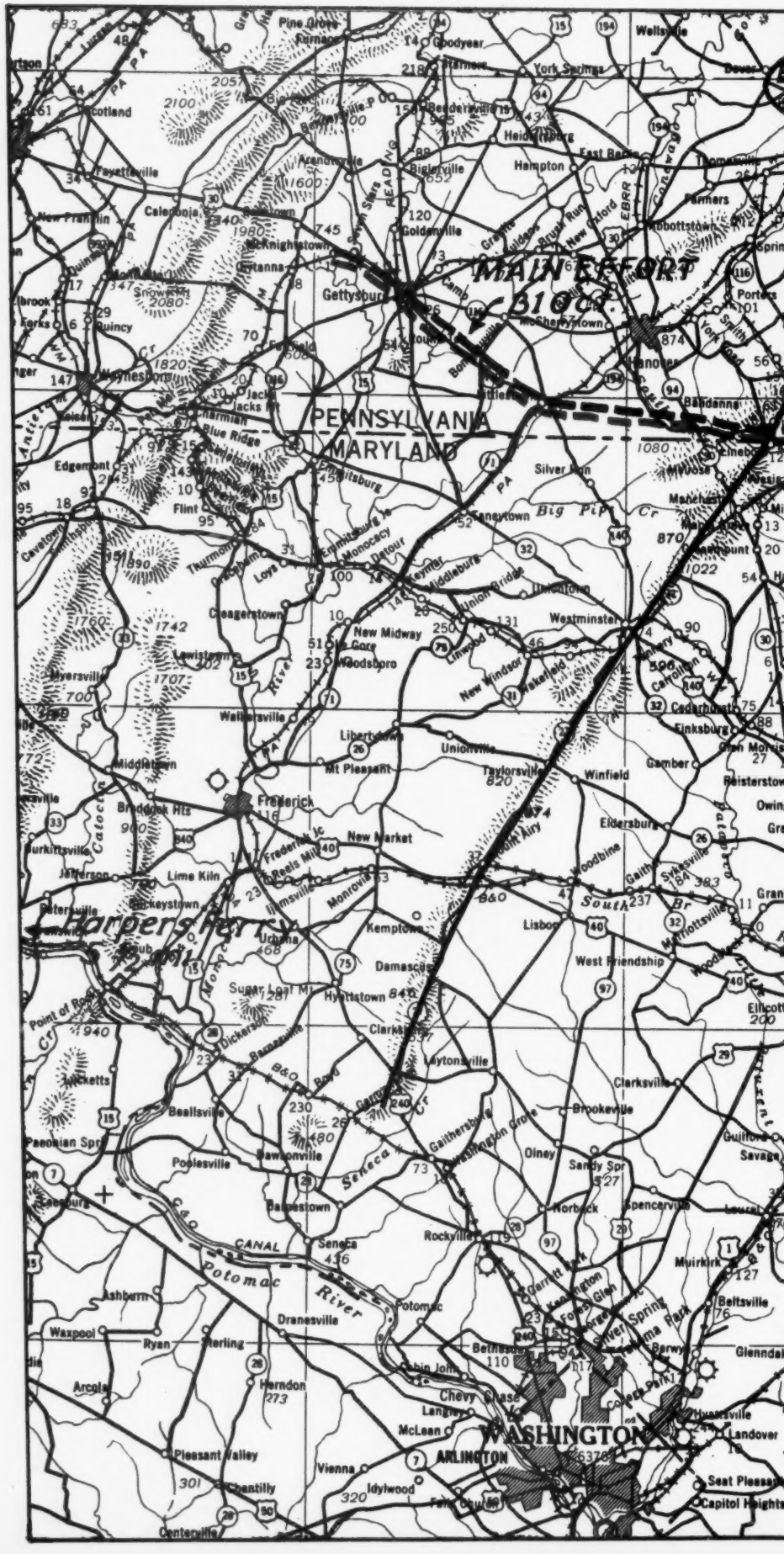
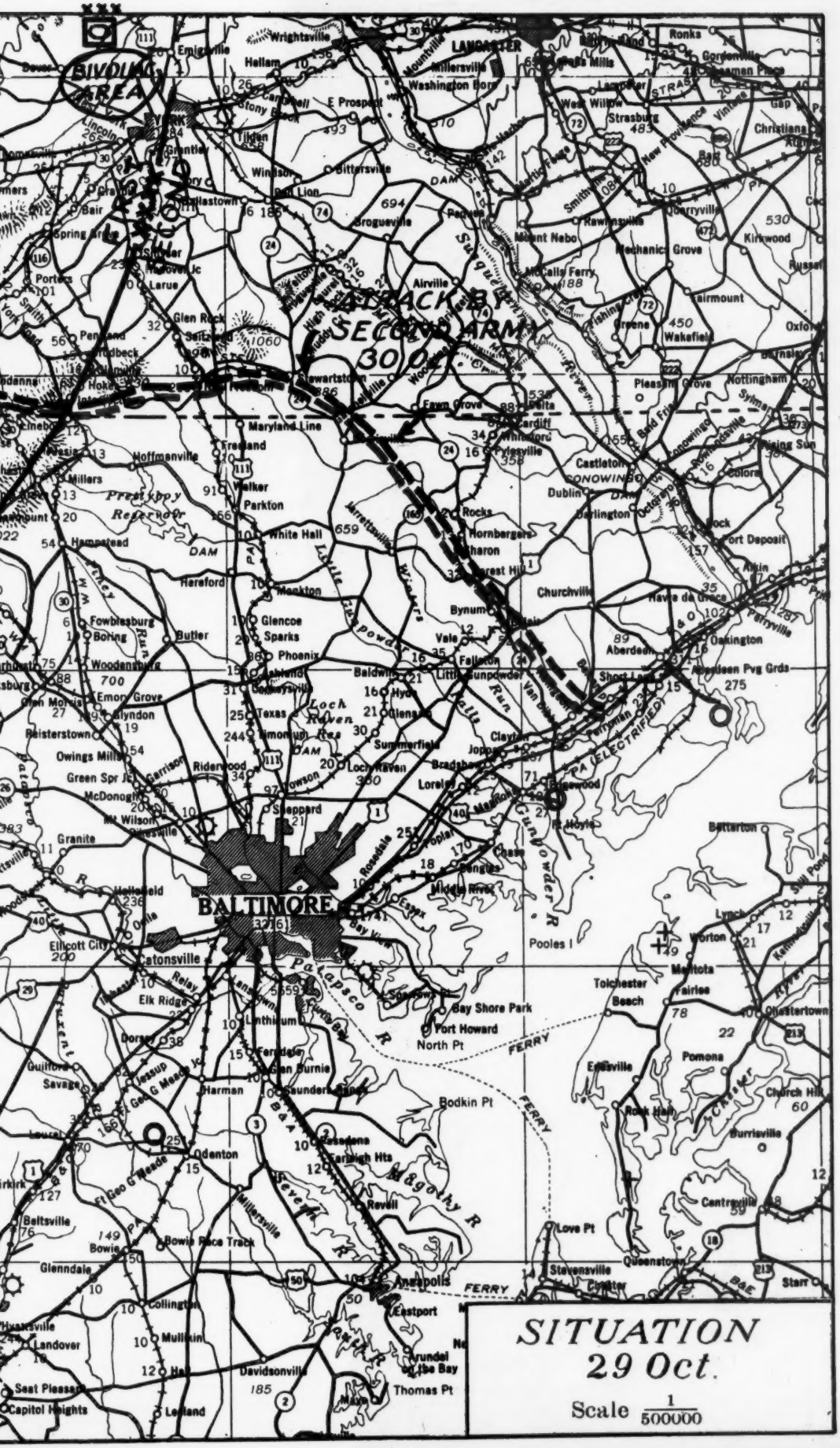
Salouel
Dury
Roye

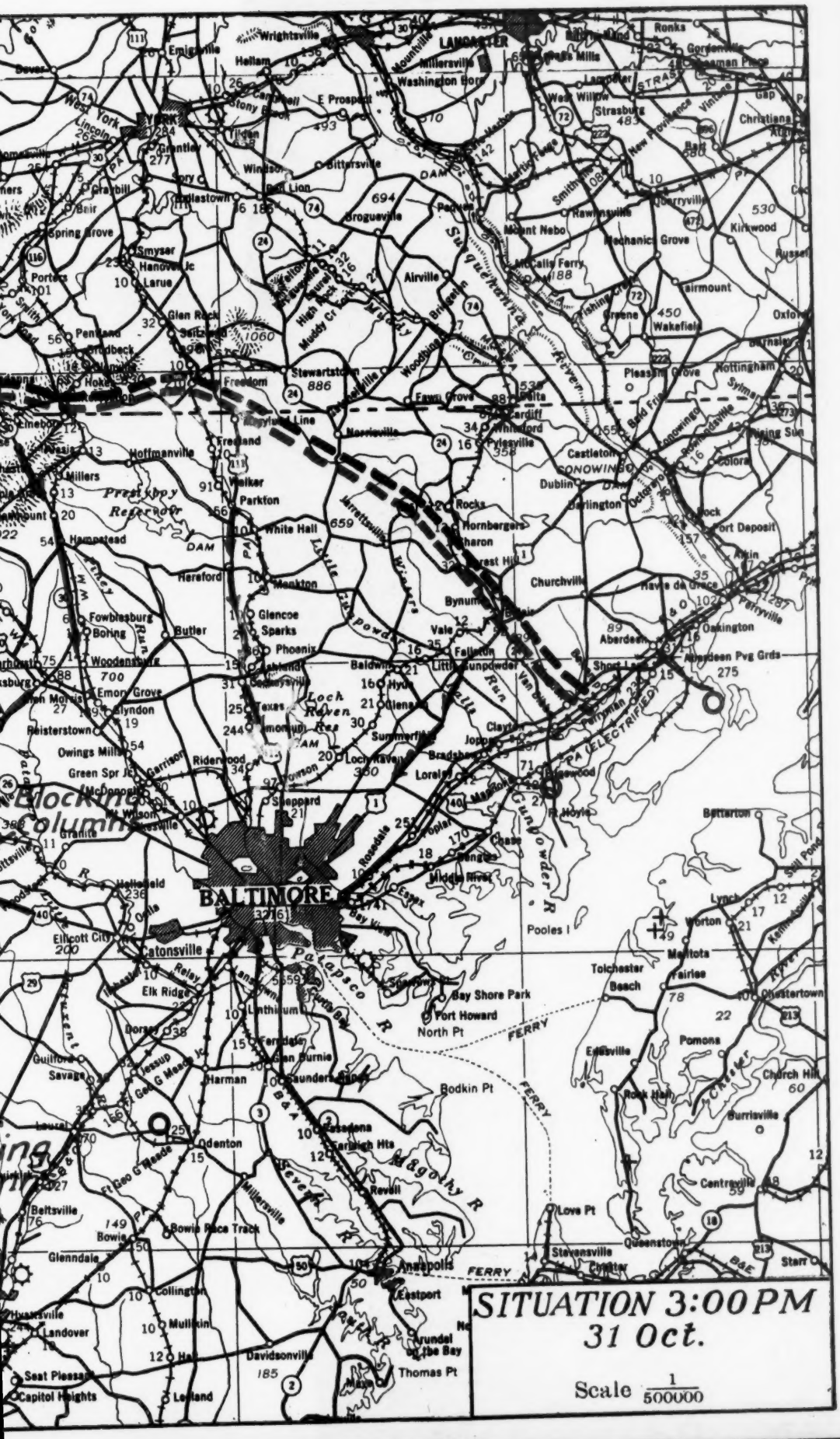

MAIN EFFORT
B1CC
PENNSYLVANIA
MARYLAND
Gettysburg
Frederick
Harpers Ferry
WASHINGTON
ARLINGTON
Potomac River
C&O CANAL
Hagerstown
Chambersburg
Waynesboro
Emmitsburg
Taneytown
Westminster
New Windsor
Union Bridge
Mt Pleasant
New Market
Damascus
Rockville
Seneca
Poolesville
Leesburg
Dranesville
Herndon
Vienna
Chantilly
Centerville
Pleasant Valley
Ashburn
Sterling
Waxpool
Ryan
Arcola
Chevy Chase
McLean
Langley
Idylwood
Fairfax
Bethesda
Silver Spring
Beltsville
Laurel
Olney
Brookeville
Sandy Spr
Norbeck
Spencerville
Clarksville
Laytonsville
Gaithersburg
Washington Grove
Clarksburg
Hyattstown
Kemptown
Urbana
Lisbon
West Friendship
Woodbine
Eldersburg
Winfield
Taylorsville
Union Mills
Libertytown
Woodsboro
New Midway
Detour
Keymar
Middleburg
Uniontown
Silver Run
Manchester
Hampstead
Finksburg
Cedarhurst
Glen Morris
Reisterstown
Owings Mills
Glenndale
Landover
Seat Pleasant
Capitol Heights
Huntsville
Myrtle Grove
Beltsville
Muirkirk
Fairland
Colesville
Burtonsville
Ellicott City
Savage
Guilford
Jefferson
Burkittsville
Braddock Hts
Middletown
Myersville
Wolfsville
Cascade
Edgemont
Blue Ridge
Jacks Mt
Fairfield
Caledonia
Fayetteville
Scotland
Quincy
Greenwood
Abbottstown
Hanover
Littlestown
Bendersville
Biglerville
Arendtsville
Heidlersburg
Hampton
East Berlin
Farmers
Porters
Bandanna
Mt Rose
Manchester
Big Pipe Cr
Little Pipe Cr
Monocacy
Catoctin
South Mt
Sugarloaf Mt
Seneca Cr
Rock Cr
Potomac
Cabin John
Glen Echo
Chevy Chase
Bethesda
Kensington
Wheaton
Forest Glen
Garrett Park
Rockville
Gaithersburg
Germantown
Clarksburg
Boyds
Barnesville
Dickerson
Beallsville
Poolesville
Lucketts
Point of Rocks
Jefferson
Lime Kiln
Buckeystown
Petersville
Knoxville
Sharpsburg
Antietam Cr
Conococheague Cr
Licking Creek
Fairview Mt
Round Top
Big Round Top
Little Round Top
Devils Den
Culps Hill
Cemetery Ridge
Seminary Ridge
Oak Ridge
Oak Hill
Herr Ridge
Willoughby Run
Marsh Run
Rock Creek
Flat Run
Bermudian Cr
Conewago Cr
Codorus Cr
Monocacy River
Patapsco River
Gunpowder Falls
Little Falls
Bonifant
Sandy Spring
Ashton
Olney
Brookeville
Sandy Spr
Norbeck
Spencerville
Clarksville
Laytonsville
Gaithersburg
Washington Grove
Clarksburg
Hyattstown
Kemptown
Urbana
Lisbon
West Friendship
Woodbine
Eldersburg
Winfield
Taylorsville
Union Mills
Libertytown
Woodsboro
New Midway
Detour
Keymar
Middleburg
Uniontown
Silver Run
Manchester
Hampstead
Finksburg
Cedarhurst
Glen Morris
Reisterstown
Owings Mills
Glenndale
Landover
Seat Pleasant
Capitol Heights
Huntsville
Myrtle Grove
Beltsville
Muirkirk
Fairland
Colesville
Burtonsville
Ellicott City
Savage
Guilford
Jefferson
Burkittsville
Braddock Hts
Middletown
Myersville
Wolfsville
Cascade
Edgemont
Blue Ridge
Jacks Mt
Fairfield
Caledonia
Fayetteville
Scotland
Quincy
Greenwood
Abbottstown
Hanover
Littlestown
Bendersville
Biglerville
Arendtsville
Heidlersburg
Hampton
East Berlin
Farmers
Porters
Bandanna
Mt Rose
Manchester
Big Pipe Cr
Little Pipe Cr
Monocacy
Catoctin
South Mt
Sugarloaf Mt
Seneca Cr
Rock Cr
Potomac
Cabin John
Glen Echo
Chevy Chase
Bethesda
Kensington
Wheaton
Forest Glen
Garrett Park
Rockville
Gaithersburg
Germantown
Clarksburg
Boyds
Barnesville
Dickerson
Beallsville
Poolesville
Lucketts
Point of Rocks
Jefferson
Lime Kiln
Buckeystown
Petersville
Knoxville
Sharpsburg
Antietam Cr
Conococheague Cr
Licking Creek
Fairview Mt
Round Top
Big Round Top
Little Round Top
Devils Den
Culps Hill
Cemetery Ridge
Seminary Ridge
Oak Ridge
Oak Hill
Herr Ridge
Willoughby Run
Marsh Run
Rock Creek
Flat Run
Bermudian Cr
Conewago Cr
Codorus Cr
Monocacy River
Patapsco River
Gunpowder Falls
Little Falls
Bonifant
Sandy Spring
Ashton



SITUATION 29 Oct.

Scale $\frac{1}{500000}$

PENNSYLVANIA
MARYLAND
WASHINGTON
ARLINGTON
Harpers Ferry
Frederick
Hagerstown
Gettysburg
York Springs
Westminster
New Windsor
Mt Pleasant
Taylorsville
Winfield
Eldersburg
New Market
Lisbon
West Friendship
Damascus
Kemptown
Hyattstown
Clarksburg
Laytonsville
Brookeville
Olney
Sandy Spr
Norbeck
Rockville
Spencerville
Beallsville
Poolesville
Dawsonville
Gaithersburg
Washington Grove
Darnestown
Seneca
Potomac River
C&O CANAL
Potomac
Dranesville
Ashburn
Waxpool
Ryan
Sterling
Herndon
Arcola
Chevy Chase
Bethesda
Silver Spring
Takoma Park
Glenndale
Beltsville
Landover
Seat Pleasant
Capitol Heights
McLean
Vienna
Idylwood
Pleasant Valley
Chantilly
Centreville
Lanham
Hyattsville
Laurel
Savage
Guilford
Ellicott
Woodbine
Sykesville
Mt Airy
Union Bridge
Taneytown
Big Pipe Cr
Silver Run
Manchester
Hanover
Littlestown
Fairfield
Emmitsburg
Thurmont
Blue Ridge
Edgemont
Flint
Lewistown
Myersville
Middletown
Braddock Hts
Burkittsville
Jefferson
Lime Kiln
Buckeystown
Unionville
Monrovia
Lisbon
Woodbine
Sykesville
Mt Airy
Union Bridge
Taneytown
Big Pipe Cr
Silver Run
Manchester
Hanover
Littlestown
Fairfield
Emmitsburg
Thurmont
Blue Ridge
Edgemont
Flint
Lewistown
Myersville
Middletown
Braddock Hts
Burkittsville
Jefferson
Lime Kiln
Buckeystown
Unionville
Monrovia


BALTIMORE
(3216)
LANCASTER
YORK
Wrightsville
Emigsville
Hellam
Washington Boro
Millersville
Mountville
Bittersville
Brogueville
Airville
Fawn Grove
Cardiff
Whiteford
Pylesville
Norrisville
Stewartstown
Freedom
Glen Rock
Spring Grove
Hanover Jc
Larue
Porters
Pen Mar
Hoffmanville
Millers
Walker
Parkton
Hampstead
White Hall
Hereford
Wenkton
Glencoe
Sparks
Phoenix
Fowblesburg
Boring
Butler
Woodensburg
Emory Grove
Glyndon
Reisterstown
Owings Mills
Green Spr Jc
Riderwood
Sheppard
Granite
Hollofield
Ellicott City
Catonsville
Elk Ridge
Dorsey
Guilford
Savage
Jessup
Harman
Laurel
Odenton
Beltsville
Bowie
Bowie Race Track
Glenndale
Collington
Mullikin
Landover
Seat Pleasant
Capitol Heights
Leeland
Davidsonville
Hyattsville
Rockville
Sandy Spring
Ashton
Olney
Brookeville
Laytonsville
Damascus
Barnesville
Dickerson
Poolesville
Beallsville
Monrovia
Mount Ephraim
Adamstown
Lewistown
Buckeystown
Frederick
Braddock Heights
Middletown
Myersville
Wolfsville
Boonsboro
Keedysville
Sharpsburg
Antietam Natl Battlefield
Hagerstown
Smithsburg
Leitersburg
Williamsport
Clear Spring
Big Pool
Fairview
Cumberland
Flintstone
Oldtown
Green Ridge
Paw Paw
Little Orleans
Hancock
Indian Springs
Sideling Hill
Rawlings
Mount Nebo
Mechanics Grove
Mt Carmel
Fairmount
Greene
Wakefield
Pleasant Grove
Nottingham
Rising Sun
Colora
Castleton
Dublin
Darlington
Rocks
Hornbergers
Sharon
Forest Hill
Churchville
Bynum
Vale
Fallston
Baldwin
Hyde
Glenco
Texas
Summerfield
Loch Raven Res
Loch Raven
Lorelei
Joppa
Bradshaw
Clarks
Edgewood
Aberdeen
Havre de Grace
Perryville
Oakington
Aberdeen Prvg Grds
Short Lane
Perryman
Van Bibber
Gunpowder R
Middle River
Essex
Bay View
Dundalk
Chase
Bengies
Pt Moyle
Pooles I
Battarton
Lynch
Norton
Mantota
Fairlee
Tolchester Beach
Chestertown
Still Pond
Bay Shore Park
Fort Howard
North Pt
FERRY
Eastville
Pomona
Rock Hall
Church Hill
Burrisville
Centreville
Bodkin Pt
Love Pt
Queenstown
Stevensville
Crumpton
Starr
Annapolis
Eastport
Arundel on the Bay
Thomas Pt
Magothy R
Severn R
Patapsco R
Gunpowder R
Little Gunpowder R
Little Falls
Jarrettsville
Winters Run
Deer Creek
Susquehanna R
Conowingo Dam
Muddy Cr Lake
Loch Raven Dam
Prettyboy Reservoir
Liberty Reservoir
Patuxent R
Rocky Gorge Dam
Triadelphia Reservoir
Brighton Dam
PA ELECTRIFIED
SITUATION 3:00 PM
31 Oct.
Scale 1/500000